Canadian Mining Taxation

Proceedings No. 17

Edited by
M.J. Wojciechowski

CANADIAN MINING TAXATION

Proceedings of the
Fourteenth CRS Policy Discussion Seminar
November 5-7, 1984
Kingston, Ontario

Edited by:
Margot J. Wojciechowski

Centre for Resource Studies
September 1985

Erratum: page 109, heading 2,
paragraph 3
should read: Eliminate limitations on
loss carry forward and carry-back

CANADIAN MINING TAXATION

Proceedings of the
Fourteenth CRS Policy Discussion Seminar
November 5-7, 1984
Kingston, Ontario

Edited by:
Margot J. Wojciechowski

Centre for Resource Studies
September 1985

Canadian Cataloguing in Publication Data

Main entry under title:
Canadian mining taxation

(Proceedings, ISSN 0711-6039; no. 17)
ISBN 0-88757-072-0

1. Mines and mineral resources - Taxation - Canada - Congresses. 2. Mineral industries - Taxation - Canada - Congresses. I. Wojciechowski, Margot J. (Margot Jean), 1936- II. Queen's University (Kingston, Ontario). Centre for Resource Studies. III. Series: Proceedings (Queen's University (Kingston, Ontario). Centre for Resource Studies); no. 17

HJ4292.A35C36 1985 336.2'78622'0971 C85-099796-8

© Centre for Resource Studies, 1985
Queen's University, Kingston, Ontario

FOREWORD

This volume contains the proceedings of the 14th CRS Policy Discussion Seminar. The CRS seminar series brings together individuals from industry, governments, labour, universities, and other organizations to share their knowledge and views on selected issues in mineral policy. The subject of mining taxation was selected because it plays a vital role in the overall competitive position of Canadian mineral producers, and because the present economic conditions provide a good setting in which to take an objective look at tax issues and propose new approaches which might be more efficient and equitable through all phases of the economic cycles affecting the Canadian mineral industry.

The seminar was held at the Donald Gordon Centre for Continuing Education in Kingston on November 5-7, 1984. The program was arranged by Peter Richardson of Queen's University School of Business, in consultation with CRS. The proceedings volume was edited by Margot Wojciechowski and produced by Donna Beaubien.

The Centre is grateful for the contributions of the speakers and participants, both during the seminar and in the preparation of the proceedings. Views expressed are those of individual participants, and do not necessarily represent the views of the Centre or its sponsors.

Margot J. Wojciechowski
Centre for Resource Studies

CONTENTS

Foreword / iii

Taxation Policies in the Canadian Minerals Industry / vi

A View of the Impact of Past Tax Changes on Canadian Mining / 1
Gonzague Langlois, Quebec Metal Mining Association

Taxation Policies in the Canadian Mineral Industry / 9
Derek Williams, Department of Finance, Ottawa

B.C. Taxation and the Present Plight of B.C. Mining / 16
Tex Enemark, Mining Association of British Columbia

Taxation and Economic Development in British Columbia / 33
Philip Halkett, Department of Finance, British Columbia

Provincial and International Tax Comparisons in the Mineral Industry: Some Preliminary Findings / 43
Roberta Albert, Energy, Mines and Resources Canada

Taxation Policies in the Canadian Mineral Industry an Industry View of Federal Provincial Tax Issues / 59
Keith Service, Placer Development Limited

Tax Incentives for Junior Mining Companies / 67
Keith O'Brien, Inco Limited

Marginal Effective Tax Rates in the Canadian Mining Industry / 76
Robin Boadway and Jack Mintz, Department of Economics, Queen's University

Digest of Discussions / 91
Margot Wojciechowski, Centre for Resource Studies

Appendix I Taxation and Economic Development: British Columbia's Mineral Exploration Industry / 113

Appendix II Seminar Participants / 121

Appendix III Program of the Seminar / 127

The Authors / 129

Centre for Resource Studies / 132

CRS Publications / 133

TAXATION POLICIES IN THE CANADIAN MINERALS INDUSTRY

At the present time, there is relative calm surrounding tax policies in the Canadian mineral industries. Compared with the turmoil and rancour that accompanied federal and provincial tax changes in the 1970s, a more stable situation has emerged. Indeed, some mining industry executives have praised recent tax initiatives taken by the federal and provincial governments.

Nevertheless, in the face of continuing depressed markets and prices for most minerals, and a gale of international competition, and ongoing provincial tax changes, there is still concern that firms in the Canadian mineral industries are hampered by the total tax burden they bear, as well as by the complexity of the tax system in Canada.

In spite of recent changes, many problems remain in the tax system. In particular, junior mining companies are disadvantaged, compared to larger firms. Since junior companies have been responsible for many of the mineral discoveries in Canada, this situation could result in fewer discoveries in future. The present regime is also hampering the industry's attempts to adjust to problems of structural change in world demand and supply conditions.

Also, despite the present mood of moderation, there are still fears that, when the mineral industries once again enjoy a period of prosperity, governments may introduce additional taxes which may inhibit future recovery and growth. The potential for increased revenues on the part of governments is very great, for debt services and for other growing expenditure needs.

At present, a variety of studies is under way in government, industry and the universities in Canada on these issues. The purpose of the seminar is to present the findings of some of these studies, and debate their implications for future directions in tax policy. The invited papers discuss the impact of past tax changes on the mineral industry, examine the present situation, and present proposals for future changes. A group of knowledgable participants has augmented the written presentations with analysis, opinions, and comments that are summarized in the digest of discussions. It is hoped that the proceedings will stimulate further consideration of the potential for improvement in the various tax regimes affecting the Canadian mineral industry, and lead to constructive efforts for change.

A VIEW ON THE IMPACT OF PAST TAX CHANGES ON CANADIAN MINING

Gonzague Langlois

I am very honoured to be invited to address such a distinguished group on the interesting subject of the impact of past tax changes on the Canadian mining industry. First, I would like to point out that I am not a tax expert, and therefore my comments are the result of personal deduction and ideas I have developed during some twenty years of activities with the Quebec Metal Mining Association. For that reason, do not be surprised if I refer particularly to the Quebec mining industry.

I recently read a most interesting old book called Free Gold, the Story of Canadian Mining, by Arnold Hoffman. This book relates, in a very enjoyable way, the beginnings of the main mining developments in Canada until 1945. Apart from the forkloric stories of the prospectors, this book contains revealing figures on the returns to investors in the gold mining industry during this early period. For example, from 1910 to 1945, the production of the major Porcupine gold mines totalled $846 million, and the dividends paid were $246 million, or 30 percent of the production. The Kirkland Lake region had an even better record; between 1917 and 1945, it produced gold valued at $488 million and paid $202 million in dividends, or 42 percent of the production. One of the mining operations in this region (Teck Hughes) reached a record for dividends paid, totalling 51 percent of the production value. Finally, Noranda Mines, during the period 1926 to 1945, produced gold valued at $258 million and paid $108 million in dividends, or 42 percent of the production value.

In those days, I would point out, when taxes on capital gains were nonexistent, equity was the way of financing mines. Today, however, lenders receive a major share of the mining production revenues.

In view of those returns, then, it is not surprising then that the prospectors have spent so much effort to find orebodies, and that mine makers have taken incredible financial risks to develop them. These results were achieved in spite of a fairly low price for gold, $20 an ounce before 1934 and $35 an ounce in the following years, and in spite of fairly high salaries compared to those paid in other industrial sectors during the great recession. These salaries, from 1925 to 1945, averaged between $4.50 and $5.50 a day.

Such a large percentage of the production value paid in dividends means high operating profits and a low tax burden. We are aware, for example, that the taxes on corporation profits imposed by the federal government were much lower during the pre-war period; so were the mining taxes, and there were no taxes on capital gains. This moderate fiscal burden surely had a great impact on the development of the Canadian mining industry. In fact, mining duties were first established in Quebec in 1925 and, until 1965, they varied from 4 percent to 7 percent, depending on the level of the mining profits.

In Ontario, with a graduated rate formula as well, the mining duties started in 1927 and were fixed at a minimum of 6 percent and a maximum of 9 percent of profits. However, mining towns in Ontario were financed with a percentage of the mining duties, while this was not the case in Quebec.

British Columbia was later in establishing its mining royalties. In 1948 royalties were fixed at a flat rate of 4 percent of the net income. I suppose that in the seventies, when Mr. Barrett raised the mining royalties to almost 100 percent of the net income, he must have concluded that B.C. had a retroactive mandate to collect from its mining industry.

After the war, the tax rate on corporation profits, federal and provincial, was set at around 50 percent of profits (40 percent federal and 10 percent provincial). However, important incentives were granted to the mining industry as well. The two most important were the 3-year tax exemption for new mines and a 33.3-percent depletion allowance automatically deducted from the profits before applying corporation taxes.

These incentives were particularly welcome because of the kind of ore deposits found during this early period. In fact, before 1960, apart from asbestos mines, some iron mines, and a few exceptional base metal mines, the Canadian mining industry generally consisted of small and medium size underground gold and base metal mines. We all know that the discovery of these orebodies requires a tremendous amount of exploration work, not only before but also during operations. The risk assumed was high and tax incentives were needed to reduce it. Since the extraction generally lasted less than a decade, it was most important to recover the investment quickly.

In short, the fiscal policies for the mining industry during these decades were particularly well adapted to the development of Canadian mining, and this industrial sector has seen tremendous development. In Quebec, for example, mining production was valued at $12 million in 1925 and

reached $625 million in 1965; the other provinces have surely shown similar progress. No doubt the tax system maintained during these forty years had a lot to do with this development.

The years 1965-72 brought to Quebec and the other provinces a period of anxiety for investors, and mining exploration and development simply marked time during these years. In Quebec, the value of mineral production varied very slightly, from $625 million in 1965 to $645 million in 1972. As for exploration, the best indication is diamond drilling footage, which in Quebec varied from a high of 2.6 million feet in 1965 to a low of 1.5 million feet in 1972.

You will remember, I am sure, that the whole mining tax system was called into question when the federal government appointed the Carter Commission, which recommended, in 1969, the complete elimination of tax incentives for the mining industry. In Quebec, the Department of Mineral Resources, then the responsibility of Mr. Rene Levesque, doubled its mining tax in 1965, fixing it at between 9 percent to 15 percent of the aggregated profits of the affiliated companies. During the same year, a governmental exploration company was set up. All these detrimental measures incited the developers to adopt an attitude of "wait and see" during this whole period.

On the other hand, the development of iron ore mines on the North Shore during the fifties, as well as the development of large low-grade base metal orebodies extracted by open pit method, like Gaspe Copper and some large copper mines in British Columbia, changed the picture of Canadian mining completely. Because of the large investments involved, the new developments seemed to have generated a bigger impact on government policies. In any event, the representations made to the Carter Commission convinced the federal government in 1972 to retain for its new fiscal legislation incentives which, although much less favourable than the former ones, seemed to favour large open pit mines more than underground operations.

These new incentives included the fast write-off of new mine investments up to the full amount of the mining profits; this replaced the 3-year tax exemption. They also included an earned depletion which replaced the 33.3 percent automatic depletion allowance. The expenses for exploration, development and mining plants made before the beginning of the operations earned depletion at a rate of 33.3 percent of these investments, and would be deductible to the extent of 25 percent of the mining profits (Quebec allows 33.3 percent). These new incentives exclude, however, all exploration and development expenses after the

beginning of the operations. Major plant expansion (at least a 25-percent production increase) was accepted in the earned depletion base.

Underground mines, particularly those exploiting vein orebodies, were relatively less favoured by such a measure, because in such mines the exploration and development expenses, which must continue during the whole life of the mining operation, are an important percentage of the production cost. In contrast, it is generally possible for the massive orebodies exploited by open pit method to carry on the major part of the exploration and development before the beginning of the exploitation, and these last investments can be included in the earned depletion based. Some gold mines, for example, which started their operations with ore reserves sufficient only for a few years, still operate after 40 or 50 years because of the continuous exploration and development work performed on site during this whole period. In the Val d'Or area, for example, this is true for Sigma and Lamaque.

It is easier for open pit operations to invest more in exploration, development, plant and equipment before starting production, thus including these investments in the earned depletion base. All this to say that, in fact, open pit mines were more favoured by the 1972 fiscal legislation than underground mines. This had not been the case under the former fiscal legislation.

The gold and base metal mines generally exploited by underground methods have a more urgent need to renew their ore reserves and so they are usually more involved in exploration activities. The new fiscal regime had a serious negative impact on mineral exploration during the period following 1972. During these years of turmoil, the provincial governments also decided to add their grain of salt to this already chaotic situation by increasing considerably their mining taxes and royalties. It started in British Columbia with the government of Mr. Barrett and extended quickly to all other provinces. The last one to raise its mining taxes was Quebec, which in 1975 doubled its tax rate, for a second time, to 15 percent minimum and 30 percent maximum of the total profits of the affiliated companies, while allowing a form of earned depletion (called investment allowances) for exploration and processing investments. Depreciation was increased from 15 percent to 30 percent. In reaction, the federal government refused to allow the deduction for provincial mining taxes and introduced instead a 15 percent tax abatement. The mining industry was then faced with double taxation and had to pay for this absurd federal-provincial fight.

As of 1976, the federal government replaced this 15 percent abatement with the existing resource allowance of 25 percent of resource profits before deduction of exploration and development expenses, interest and earned depletion. The federal income tax rate of 46 percent, minus the 10 percent provincial abatement, was effectively 36 percent. It was further reduced by a 25 percent resource allowance which represents a 9 percent tax credit, bringing the marginal effective federal income tax rate to 27 percent. The double taxation, however, still exists.

In Quebec, during the same period, following some scandals in the financing of ghost mining companies, La Commission des Valeurs mobilieres established such restrictive rules that the junior mining companies were no longer able to raise public financing. In fact, only one or two succeeded in obtaining public funds between 1970 and 1979. The image of the mining industry was so distorted during these years that there were many among the Quebec population who adopted Mark Twain's definition of a mine, which is: "A hole in the ground with liars at the top".

The increase in the volume of Quebec mineral production during the 1970s was much more the result of national and international inflation rates than of real growth for the sector, and ore reserves throughout Canada dropped consistently. The only way to revive exploration activities was a change in Government's attitude.

For years, the different mining groups have been repeating to the Quebec and the federal governments that their fiscal policies must be more favourable towards exploration activities. Finally, in 1978 the Quebec Minister of Energy and Resources understood the problem. The first step taken was to amend the Civil Code in order to permit the formation of "limited partnership groups" to undertake exploration activities. This first step was supported by an important fiscal incentive, granting to investors the possibility of deducting 166 percent of their exploration expenditures against income from all sources, in calculating their personal income tax. In fact, Quebec applied to its mineral sector what the federal government had accepted for drilling funds in the petroleum industry.

Later, the regulations of la Commission des Valeurs mobilieres were reoriented, after consultation with the interested groups, and the Montreal Stock Exchange adopted more favourable rules for the financing of junior mining companies. At the same time, the Quebec government decided to raise from $150,000 to $250,000 the non-taxable profit of mining companies, and to allow on-site exploration expenses for underground mines to earn the investment

allowance (similar to earned depletion). It extended profit averaging from two years to four, and allowed up to 15 percent loss credit carried forward over 4 years for mining tax purposes. Also, in 1978, Quebec finally allowed exemption, by way of refund, for the tax on fuels consumed in off-highway mining equipment.

All these positive measures, added to an increasing price for gold, acted as a sparks for the tremendous exploration boom that northwestern Quebec has experienced since 1980. During the last 3 years, an average of more than $100 million a year has been spent in exploration activities, and half of this amount was raised in Quebec. The result of this spurt in exploration was the discovery of many new gold orebodies and the opening of several new gold mines in northwestern Quebec in particular. It is worthwhile to note that this extraordinary increase in exploration activities has taken place during one of the worst recession for the Canadian mineral industry.

Finally, in 1983, the Quebec Department of Energy and Resources worked out an impressive program to accelerate mining investments by participating financially, for up to 20 percent of the total investment. Presently, approximately $100 million has already been committed by the Quebec government, and has generated some $700 million in new investment in mining projects for the next five years.

What kind of lessons can we learn from this short review of these mining fiscal policies? It appears to me, first, that fiscal policies have a tremendous influence, positive or negative, on the development of the mining industry. It has been astonishing to watch the change in the attitude of the mining investors (small or big) after the adoption of these favourable measures, even in a period of deep depression and high interest rates.

The search for and development of mineral resources have been so attractive to Canadians, since the very beginning, that any sign of government understanding shown by proper fiscal policies has a direct impact on encouraging exploration and development activities. This happened from 1925 until 1965 for Canada, and again in Quebec since 1978. On the contrary, when governments have applied their "lemon squeezer theory", as they did in the seventies, mining activities have slowed down considerably.

Coming back to the favourable fiscal and investment policies that we have experienced in Quebec since 1978, there is no doubt in my mind that their impact has revived, first, exploration activities and, second, the development of new mines. Those are surely two essential activities of the mining industry. There is a third one, however, even

more important, which is to ensure the long-term profitability of mining operations.

What the Quebec government has done to ensure the long-term profitability of its mining operations is a different story. For example, the cost per ton for indirect taxes rose by 168 percent between 1975 and 1982. The cost per ton for social policies and energy sustained a much bigger increase; they have risen respectively by 385 percent and 341 percent for the same period. The municipal and business taxes were raised substantially as a consequence of amendments brought to municipal legislation. The share paid by employers for the health program doubled 3 years ago, and is now fixed at 3 percent of the payroll. As you know, unemployment insurance premiums increased by 50 percent last year. As for Workers' Compensation, its cost was $300 per employee in 1973 and it reached more than $2,000 per employee in 1983; we are presently facing a new bill which could double that amount if adopted.

More and more social benefits are being added to the financial burden supported entirely by the employer. The greater part of these amounts is related more to social benefits than to compensation for real accidents and diseases. All these social measure are adding to an ever-increasing portion of the production costs. Even the sales tax exemptions allowed for production equipment during the previous decades are no longer effective because, in many instances, the technological changes in production equipment and material have rendered obsolete the definitions on which the sales tax exemption was based. For example, until lately, trackless mining equipment was taxed because it was rolling equipment, and the exemption applied only to fixed assets.

So, the present paradox for Quebec is that, while the government has developed favourable policies for exploration and the development of mineral resources at the same time it has so burdened the producers by other policies which are costly for the mining operations that it will be more and more difficult to meet the world competition and operate profitably.

A stable and moderate tax system should be worked out if we are to ensure the survival and the profitability of the Canadian mining industry. Even with a lower tax return from mining companies, the governments themselves could profit from prosperity of the mining industry, since the income tax collected from the workers amounts to much more than the taxes on company profits. In 1982, for example, the total income tax paid by each employee working in Quebec mines averaged $12,500, while all the profit taxes paid to governments (federal and Quebec) were equivalent to an average of $1,700 per employee.

In concluding, permit me to make a few recommendations which would assure a proper tax system.

1. Allow the mining companies to build up non-taxable reserves to be used in exploration, development and construction of new mining plants.

2. Replace the progressive mining tax rates in those provinces that have them by a uniform and non-progressive tax rate, and allow interest and tax on capital as deductions from taxable income.

3. Clarify the rules for sales taxes, so that no equipment and material used directly and indirectly for production purposes be subjected to tax.

4. Allow special personal deductions for individuals working in remote mining communities, to offset the higher cost of living and lack of government services.

5. Restore Workers' Compensation benefits to their original use, which was to compensate for real work accidents and diseases, and have social benefits paid by governments instead of employers.

If all this is done, the Canadian mining industry should regain its proper rank in the Canadian economy, a rank it would never have lost, if appropriate government policies had been applied.

TAXATION POLICES IN THE CANADIAN MINERAL INDUSTRY

Derek Williams

Aspects of Federal Tax Policy

Federal income tax policy as it applies to the mining industry in Canada focuses on the various special rules in the Canadian Income Act that specifically apply to operating mining companies, to junior mining companies which are in the process of exploring for or developing mineral deposits, and to individual prospectors and their financial backers who search out new mineral deposits. In order to get a fair perspective of our current policy objectives for the industry, it is necessary to examine how the system evolved through a number of major tax studies during the past twenty years.

The Carter Commission was established in the early 1960s to review the federal income tax system. The commission was established in response to the criticisms suggesting that the system did not apply fairly to all taxpayers. The major criticisms were:

- capital gains, usually available to more wealthy individuals, were not subject to tax;
- highly profitable major mining companies were paying little if any income tax;
- stories of expense account abuses;
- stories of mining promoters who made millions without paying any tax.

The special tax incentives for the mining industry during the 1960s included.

- a three-year exemption for new mines;
- an automatic depletion allowance of 33.3 percent, on mining profits;
- immediate deduction for exploration and development expenses;

- generous depreciation allowances on depreciable mining assets.

In addition to the above deductions available to the mining companies, special incentives were offered to individuals, including the following:

- recipients of dividends received from mining companies were also entitled to a depletion allowance of up to 20 percent of the dividend received;

- the sale or purchase of mining properties were treated as capital transactions, and were neither deductible nor taxable;

- prospectors and their grubstakers were not subject to tax on the sale of mining properties found as a result of their prospecting efforts. This was a special exemption, since such activities would normally be taxed as business income.

The Carter Commission report recommended doing away with special tax incentives and exemptions and proposed that all income including capital gains should be taxed in much the same manner. This report was devastating for the mining industry, which stood to lose most of the special tax provisions acquired over many years.

In response to the Carter Commission report, the federal government set up a Tax Policy Branch in the Department of Finance to prepare a White Paper for discussion purposes called "Proposals for Tax Reform". This White Paper, which was presented on 7 November 1969, proposed major changes for the mining industry, including:

- termination of the three-year exemption for new mines as of 31 December 1973;

- termination of the automatic depletion on production income at the end of 1975;

- immediate termination of the depletion allowance on mining royalties and dividends;

- immediate termination of the exemption for prospectors.

The White Paper also introduced new incentives, related to high-risk new mine expenditures, which would ensure that no income tax would be paid on a new mine investment until after the recovery of the initial investment:

- exploration and development (E&D) expenses, including mining property costs, would be deducted immediately up to the amount of income;

- exploration and development expenses other than the resource property costs would be eligible to a new earned depletion allowance (This allowance was earned at a rate of 33.3 percent of the eligible expenses and could be deducted in the same manner as automatic depletion);

- new mine depreciable assets would be eligible to earn depletion and could be written off immediately against the new mine income or, if greater, at 30 percent on the declining balance.

The proceeds from the disposition of mining properties would be subject to tax at normal rates.

After a lengthly debate on the White Paper, the federal government introduced tax reform legislation in 1971. The tax reform legislation included the first step in a new approach to mining tax policy, designed to encourage investors who were not directly involved in the mining industry to invest in Canadian exploration and development expenses. Such investors could initially write-off the E&D expenses at a 20-percent rate; this was increased to 30 percent in 1974, and to 100 percent in 1976.

The new legislation eliminated the automatic 33.3 percent depletion allowance. In its place, the government introduced the concept of "earned depletion", which permitted a deduction of $1 for every $3 of eligible expenditures, up to a maximum of 33.3 percent of resource profits. Major expansions of existing mines were to be made eligible for earned depletion, as well new mines. These provisions were to become effective in 1977.

Another new concept in the 1971 legislation was the elimination of the deduction of provincial mining taxes for income tax purposes. Instead, a tax abatement of 15 percent of mining income was to begin, also in 1977.

With this new tax policy, it became apparent the federal government was shifting a substantial part of the potential tax burden of the mining industry from the federal government to the provinces. This decision was in part a result of the fact that the provinces and the mining industry had combined forces to lobby against the White Paper tax proposals. There was some uneasiness at the time on part of the mining industry that the provinces might develop a more aggressive approach to tax revenue collection than the

federal government, especially if profits were to increase. The provinces have historically looked to their natural resource companies as a source of revenue.

Unfortunately, after the long debates related to the Carter Commission, and the White Paper on tax reform, and the subsequent tax reform legislation, the stability of the tax system for the mining industry and the oil industry did not last very long. The 6 May 1974 federal Budget announced major tax changes for the mining and oil and gas industry, including moving up the timetable for some of the changes proposed in 1971:

- effective immediately (instead of 1977), provincial mining taxes and resource royalties were no longer deductible for income purposes, and the federal tax abatement of 15 percent on mining income was introduced;

- the earned depletion system become effective immediately, rather than being deferred until 1977;

- development expenses were to be written off at 30 percent, rather than the 100 percent rate that previously existed.

These major changes were triggered by rapid increases in crude oil and metal prices during 1973, and by a more aggressive approach by the provincial governments, which wished to share in the increased profitability of the resource industries. There was a feeling that the resources industries were caught in the middle of a federal-provincial dispute over the sharing of revenue from the exploitation of our natural resources.

The 15-percent tax abatement provision was basically a reduction of the federal tax rate. It was replaced in 1976 with a resource allowance of 25 percent on resource profits, before the deduction of E&D and interest expenses. The resource allowance, as a deduction from income, let the federal tax rate return to its normal rate of 36 percent; as a result, tax incentives like earned depletion and the deduction of exploration and development expenses became more effective. The resource allowance reduced the effective federal tax rate of 36 percent back to 27 percent. If a taxpayer had the maximum earned depletion available (which would be deductible at a rate of 25 percent of income determined after the deduction of the resource allowance), he could further reduce this effective rate to about 20 percent.

During this period of change, the resource tax provisions generally applied to the oil and gas industry and mining industry in much the same way. This combining of the rules probably benefited the mining industry. For example, the 25-percent resource allowance, determined in reference to the level of provincial levies, which generally were higher for oil and gas than for mining. The policy behind the resource allowance was to give the provinces some taxing room, without allowing them to erode the federal tax base.

Since 1976 the federal tax system has remained relatively stable, although there have been some relieving measures for the mining industry. In 1978, the development costs related to a new mine, which had been deductible at a 30-percent rate after 1974, were returned to a 100-percent write-off rate. A change in 1983 made it more attractive for persons without resource income to incur mining exploration expenses, since the earned depletion could be written off against any income source; previously, the depletion could be deducted only against resource profits. The Budget of 12 November 1981, which was severely criticized for many of its measures not directly related to mining, improved the provisions related to the flowing out of exploration expenses to investors who incurred the expenses for shares of a corporation. These shares could be treated as capital property rather than as inventory, and thus be subject to the capital gains tax rate (1/2 the normal) on a subsequent sale of the shares.

Looking in broad terms at the many changes that have taken place in the Canadian income tax system over the past 20 years, it is apparent that a distinct trend has developed: **all income should be taxed as it is earned - generally, at normal or standard rates.** (Capital gains, which are taxed at half rates, are a special case and respond to the argument that not all of a capital gain is truly a real gain - some portion of the gain relates to inflation.) This principle has led to the elimination of the three-year exemption, automatic depletion, and tax exemptions for prospectors.

The federal government's overall tax policy has also **redirected its tax incentives to high risk expenditures** rather than to exemptions, a move which is considered to provide a more effective form of assistance to industries over the long term. Scientific research was made available as a tax shelter for investors, and tax shelters were made available for housing and films. There are also numerous investment tax credits available to encourage new capital investments.

For the mining industry, there has been an obvious move toward increased tax shelters and other tax incentives for high risk exploration and new mine investments. The mining industry has been successful in maintaining a tax-free status on new mining projects until the initial investment has been recovered. Tax incentives have also been directed to the processing of mineral ores in Canada.

There are no provisions which exempt income, when it is earned, from being subject to tax. The basic principle that exists is that, although the government is prepared to share the risk related to expenditures, it also intends to share in revenues when they are earned, through the tax system. It would be inconsistent to give tax incentives related to expenditures and then not tax any resulting revenue.

There are many special tax provisions that apply to the mining industry which recognize the peculiar risk and the long timeframe which may exist from the exploration phase to a successful production phase. Exploration and development expenses and earned depletion can be carried forward indefinitely. This type of advantage does not apply to other industries. There are also special provisions, with some restrictions, to transfer unclaimed exploration and development expenses and earned depletion from one company to another.

The taxation provisions that apply to prospectors have recognized the risky nature of this vocation. Although the sale of properties is no longer tax-exempt, the value of mining properties found by a prospector should increase, since the discovery costs are deductible for tax purposes by the purchaser. The immediate deductibility of exploration and development expenses and the more generous earned depletion deductions for investors should make more investment funds available to worthwhile prospecting ventures. Also, a special rule allows a prospector to exchange his mining properties for shares of a company on a tax-free basis. Any gain on the subsequent sale of these shares may be taxed as a capital gain.

Since the federal and provincial governments each operate independent tax systems, which are not automatically affected by tax changes in the other jurisdiction, each government can respond to industry concerns with the knowledge that any relief that they may give will not automatically be taxed away by the other jurisdiction. Each government, can in effect, operate its tax system independently, with the assurance that changes will go directly to the industry and not indirectly to another government jurisdiction.

I would like to close out my comments today by saying that, since tax reform, the federal government has responded positively to many of the representations received from mining groups. There have been a number of federal-provincial task forces during the past few years reviewing the tax burden of the mining industry in Canada, and they have led to relieving measures in both the provincial and federal tax regimes.

The tax burden on the mining industry in Canada today is not onerous. The difficulties of the industry related to profitability and the attraction of new capital are no doubt the result of market conditions for metals and minerals.

B.C. TAXATION AND THE PRESENT PLIGHT OF B.C. MINING

Tex Enemark

In the two and a half years that I have been President of the Mining Association of British Columbia, I expect that I have earned the reputation of being the carrier of more bad news than Cassandra, that gifted seer of Greek mythology. I am sure that some people are tired of it, and I can certainly tell you that I am: it gives me no pleasure to be the bearer of bad news, or the foreteller of doom. Yet over the past two and a half years we have seen copper reach its lowest price, in real terms, since 1933 and the hesitant recovery we saw earlier this year was not very robust; copper is again down to depressingly low prices. Molybdenum, too, is less than a quarter the price it was only a few years ago, and substantially less than half the price of break-even production for primary molydbenum producers. While zinc has had some price recovery, lead has not. Silver and gold, which kept some mines from going under in the last couple of years because they had these metals in small amounts, are also slipping in price in recent months. Coal, too, has seen a slippage of both price and volume. Thirteen mines have been forced to close in B.C. in the past 2 years.

I could go on at some length about the plight of British Columbia's metal mining industry. I could describe the human problems created in laying off about 3,500 people, or the dislocation in communities wholly or partially dependent on mining when their mine closes down. I could relate to you some of the conversations I have had with senior mining executives who shake their heads in disbelief that prices could go so low, and stay that way so long. I won't do these things because you all have a general understanding of the state of the mining industry in the province today. Things are terrible; there is no evidence of an early turn-around; in fact, things could get considerably worse - and more mines will close - unless there is some reaction by governments to the situation within the next few months or unless there is a dramatic reversal of metal price trends.

My purpose in speaking to you today relates to the fact that the Government of British Columbia has issued a document entitled "Taxation and Economic Development",

and the Minister of Finance, the Hon. Hugh Curtis, is holding hearings around the Province, seeking input to the review of B.C.'s tax structure.

I want to begin by pointing out that our concern - and our discussions with the Government of British Columbia concerning taxation - is not a recent development. As taxes have been changed, invariably upward, there have been repeated representations made to the government. I will not go into the situation that surrounded mining taxation from 1972 to 1977. That is history and involved a particular ideological view by the previous provincial government, and a complex series of actions and reactions between the federal and provincial governments over natural resource revenue sharing.

However, in 1980 our Association pointed out to the government that we were being hit entirely unfairly by the application of the provincial sales tax to production machinery and equipment. Not only was there no favourable reaction, but the sales tax has subsequently increased from 4 percent to 7 percent.

In 1982, following the increase of our share of the water tax from about $1.3 million a year to $18 million annually in three years, the negative implications of that policy were demonstrated to the government. But there was no reaction.

In 1982 the provincial government began a review of property taxation. Again, we made representations concerning the bias of property taxation against capital intensive industries such as ours. And again, we received no relief.

In 1983, when the federal government dropped the tax on natural gas, the provincial government not only did not pass on the savings, it raised the tax further and pegged future natural gas pricing to that of oil. Our plea for relief went unanswered.

Last year, we filed a document with the government entitled "Taxation and Future of the British Columbia Mining Industry" a brief that carefully catalogued the adverse effect of all of the tax changes of the previous few years. Again, there was no reaction beyond a commitment by the government, in the last Budget, to examine the taxation of business in the province. Thus, we arrive at today's circumstances and the topic of my speech.

In the preface to the Minister of Finance's document, there is the observation that "the world economy in recent years has undergone major structural changes". That is certainly true, and these changes have had a severe adverse effect on our provincial economy in general, and most

definitely on the mining industry in particular. After several decades of reasonably strong and steady economic growth, and especially after the overheated and inflationary environment of the 1970s, the shock of adjusting to these adverse changes has been difficult for all of us.

In that context, the decision to down-size the provincial government was an essential, if extremely difficult and controversial, decision. It was, however, an inescapable decision and all of us have to recognize the political courage displayed by the government in down-sizing itself. There have also been some moves by the government in the area of deregulation, and for that, too, we are also thankful. So I would not want anyone to think that the government has been totally unresponsive to our problem, but deregulation has yet to go far enough and further legislative changes are necessary. The benefits of restraint have yet to trickle down to the private sector, and not simply stop with the bottom line of the government!

The objective of restraint, among other things, was to persuade people that the fundamental circumstances of the province, one primarily dependent upon the economic development of our natural resources, has changed. I think that is now understood in spades. But now is the time to move beyond restraint to a fiscal policy that supports moderate and sustainable recovery and growth. We think this can be achieved in the face of difficult external circumstances.

The paper Mr. Curtis has issued - I will call it a White Paper for the sake of brevity - provides a thoughtful summary of many of the issues that confront us. There are four comments with which we are in complete agreement:

- "Both the level and the structure of taxation affects economic activity";

- "Too much of the nation's wealth and productive effort is dedicated to keeping complicated records, filling out numerous forms and trying to interpret and apply complex (tax) legislation";

- "The effect of taxation on economic decisions is difficult to determine with certainty";

- "Individuals and businesses can be adversely affected if taxes are not sensitive to changes in their income levels and economic circumstances".

I will have more to say about all of these comments as I proceed but I want to begin with the comment of a Chief Justice of the U.S. Supreme Court of more than one hundred years ago:

"The power to tax involves the power to destroy".

While I do not want to emphasize that statement too much, I want you to think about it as I go through the problems we are having with taxation in the province because, while no one of the taxes I will talk about is in itself a major problem, when one takes all of these taxes - and the increasing trend in taxation - into account and tries to interpret that trend as a signal from the government towards an industry as to how it perceives that industry, then, indeed, Mr. Justice Marshall's comment becomes very worrisome indeed.

The White Paper contains the summary of a study comparing the taxation of copper mines in B.C., Ontario and Arizona. We have not seen the entire study but we have to ask some questions about the methodological details of this work. In particular, the data provided on page 31 suggest that the hypothetical copper mine in B.C. would have a rate of return of less than 5.5 percent at a copper price at $1.00 (U.S.) per pound. Yet most of the actual mines in B.C. would earn more than 5.5 percent on their investment if the price of copper went to $1.00 (U.S.) per pound.

Thus, the data suggest that the assumptions made about costs and other parameters in B.C. may not have been completely realistic. Since the tax system, with all its complexities is notoriously non-linear in its response to changes in key parameters, it is not easy to say how sensitive the results in the White Paper would be to changes in some of the assumptions. For instance, Ontario has a graduated income tax on mining, while B.C.'s is flat. Thus, at whatever price might be chosen, the tax implications might be dramatically different. But we certainly agree with the White Paper's remark that "caution must be exercised in drawing more than broad conclusions from the data".

At the level of broad conclusions, however, there is no reason to challenge the general picture that emerges: taxes on copper mining are relatively similar in B.C. and Ontario, and both are notably higher than taxes in Arizona. This broad conclusion accords well with other studies that have been done.

In our judgement, however, the essential point is not that mining taxes in B.C. may be slightly higher than in Ontario or, for that matter, that the opposite may be true.

The central fact is that even the mines in Arizona, with their more favourable tax rates, are in deep economic trouble and many of them are closed. The mines with which we must compete in the world do not reside in Arizona and the cost of doing business - or staying in business - is based on a complex combination of factors of which taxation is only one facet. Ore grades, wage levels, productivity, exchange rates, access to - and cost of - transportation, and a host of other consideration also play a part in determining which mines will prosper and which will fail.

One can argue what the "correct rate" of taxation on the industry ought to be. Lots of people earn their PhDs in economics fiddling with the theory of taxation. In the larger context, though, a comparison of tax rates alone can be misleading. The bottom line is, if the level and structure of taxation in B.C. goes beyond what the industry's overall circumstances can support, it will not matter at all whether those taxes are higher or lower than the taxes in Ontario or some other jurisdiction: we will simply be out of business. In other words, taxes do not exist in isolation: they are just one more cost of doing business among a lot of other costs. Lower taxes will add to our competitive advantage in the world, while higher taxes will add to our list of disadvantages.

Let me summarize some of our historical disadvantages. Most of our mines are in remote areas and the mining companies have had to build communities, or undertake substantial highway construction costs to access a new mine, and frequently they had to do both. Many of our orebodies are of low grade. Our labour costs are among the highest in the world, something I will mention again later. The various regulatory standards which must be met are very high: health and safety regulations, environmental regulations, and various other standards of a socio-economic nature that have expensive costs of compliance. As an aside here, I want to make it clear we are not arguing that any of these ought to be substantially lowered. They simply have to be recognized as a cost with which we have to deal, but that in other countries, lower standards, or no standards, result in lower costs, and thus a price advantage.

However, we also have had some traditional strengths: we have led the world in the technology of mining low grade, open pit deposits; we have had some advantages in political stability, although there have been problems with tax changes and policy instability; we have been favoured by advantageous energy prices, until recently, and mostly

we have good transportation infrastructure and a productive workforce.

Two things have caused the plans for our industry to go awry over the last few years. First, we made wage settlements that not only moved substantially ahead of inflation, but in many cases were substantially greater, apparently, than what large parts of the mining industry will be able to sustain over the longer term.

Second, as a result of government policies, energy costs have sky-rocketed, and a variety of taxes based on other than profits have increased dramatically. Thus, we are not only stuck with the shortcomings we have had previously, but our strengths have been seriously eroded, in part as a result of public policies.

That is to say that, on the issue of wage settlements, during the boom of the 1970s, we had to compete for the same work force against the construction industry which had a Labour Code-created monopoly on construction work, and the construction industry was able to pass on to its customers very high wage and benefit settlements. We had to compete against B.C. Hydro, which also made large settlements. And we had to compete against the forest industry.

We had, in each set of negotiations, a labour relations choice: either to settle for wages which we thought were too high, or suffer a long strike. Of course, during boom times as soon as the mine is struck many strikers would be able to go off and work somewhere else, until the strike was over. On the other hand, while the mine was closed, it had no revenues but was still bearing substantial fixed costs.

This was not, I submit, much of a choice, if the labour dispute came at a time of high prices in an industry that is notoriously price-cyclical. So we made some settlements that, ultimately, have contributed to undermining the economics of some of B.C.'s mines. Of course, major beneficiaries of high wage settlements are governments, whose income and consumption tax revenues increase substantially.

Last year, we made an extensive submission to the Ministry of Finance on the issue of profit-based taxes. In essence, it said that the various provincial taxes based on net income had a number of shortcomings, primarily technical in their implications, and because they did not fit with the federal tax structure, the system was not as sound and efficient as it might be. The government has not acted on that brief. I would like to discuss some of those broad issues further with you, but with time constraints being what they are, I am going to focus today on the <u>taxes</u>

based on other than the profit base, because today they are a much higher priority: that is to say, our taxes on profits are small now because profits themselves are virtually non-existent.

First on the list of taxes are those which tax assets to support schools and hospitals, the municipal property tax, the rural property tax, and the corporation capital tax.

As I have said earlier, mining is capital intensive. It also invests a great deal of money in machinery. And in British Columbia, machinery and equipment is taxed by the province for school and hospital purposes. During the review of property taxation undertaken by Mr. Curtis a couple of years ago, the business community in the province was virtually unanimous in recommending that the machinery and equipment tax base be abandoned in favour of a redistribution of the revenues so raised across the entirety of the commercial property tax base.

There are number of reasons for this. First, because we use so much machinery and equipment, the taxation burden we carry is unreasonably high - and frankly, we are looking for a tax reduction to come out of this simple reform. But it ought not to be lost on all of us that the valuation of machinery and equipment is intrinsically contentious, simply because these items are so seldom bought and sold in the open marketplace, after their initial acquisitions. The value of a mine, and therefore of the machinery, is very much dependent upon the size and value of the orebody adjacent to it: when the orebody ceases to be economic, the machinery is worth, ordinarily, what it will bring for scrap.

However, the existing rules create some unfortunate distortions in investment decisions, in terms of trying to create jobs and economic growth in British Columbia. In mining, for instance, the haul trucks in an open pit mine, being mobile, are not included as part of the machinery and equipment tax base, while conveyor belt systems that do exactly the same job are taxed. Thus, current tax laws make haul trucks more attractive in many circumstances. However, keep in mind that haul trucks are not manufactured in British Columbia while conveyor systems, which are generally more energy efficient than the trucks, would be substantially fabricated here.

Thus, in part because of the taxation of the conveyor systems we, as an industry, are not moving as quickly towards this more efficient way of doing business and B.C. manufacturers are suffering.

Our second key concern in the area of property taxation is the sharing of the tax burden between residential

and non-residential taxpayers. While in 1978 the ratio between the two stood at 2:1, by 1984 the ratio had risen to about 3.4:1. We recognize that this shift was not as a result of intentional government policy but arose inadvertently as a consequence of attempts to protect municipal finances from the impact of rapidly fluctuating housing prices. However, the impact on our industry has been disastrous: the mining industry's school and property taxes went from $23 million in 1978 to $60 million in 1983 - an increase of 161 percent in five years. Even corrected for the growth of the industry, the taxes more than doubled. It is urgent that this inadvertent shift be corrected as rapidly as possible by moving the tax rates back to the 2:1 level that prevailed in 1978.

Our third concern is the tax treatment of mines that are indefinitely closed for economic reasons. A mine that is closed down, even indefinitely, could be paying between one-half to one million dollars in property taxes. We think this is a grossly unfair and excessive.

Finally, the government should move immediately to eliminate the corporation capital tax. This is a tax applied to a corporation's source of capital, which in practice is mostly used to buy property, plant and equipment. Thus, there is a large measure of double taxation on corporate assets. If a similar system were applied to homeowners, they would be taxed once on their houses and then they would be taxed a second time on their mortgages. It is not hard to imagine the cries of outrage that would greet such a system. Yet corporate taxpayers are expected to accept such an arrangement without complaint.

The total elimination of this iniquitous tax would cost the Government of British Columbia very little and would send a clear message of encouragement to investors that capital, put to productive use in British Columbia, will not be plagued by this foolish tax.

Besides the taxes on property and capital, there are a group of extremely pernicious taxes that hamper economic development because they are linked to the level of operations, and are therefore a disincentive to investment and, in hard times such as these, continued operation. These include the sales taxes, Workers' Compensation Board levies, and energy taxes. Taxes of this type are so destructive because they increase the cost of mining an incremental block of ore, and thereby reduce the expected life of the mine.

Now this is an extremely important point, and since most people do not understand the theory of what separates a profitable mine from an unprofitable one, I want to bore you for a minute with some elaboration.

Imagine in your mind what a mine planner begins with: a mountain that shows promising mineralization. Conceptually, the mining engineer divides this mountain into a very large number of small blocks, like sugar cubes piled high on a table. Through a combination of diamond drilling and sophisticated geostatistical calculations, the mine planner then calculates, for each of those individual cubes, the value of several key parameters: the percentages of various metals contained, the hardness of the rock, the percentage of recovery of ore from waste, and so on.

On the revenue side, metal prices are projected, and are then used to calculate the potential revenue for each cube. Similarly, the costs of mining each block can be estimated. These costs involve, among other things, the spatial location of each block (which affects the amount of fuel that will be used to haul that material to the mill, or to the waste dump, for example), the hardness of the rock (which affects the amount of electricity used in grinding), and of course unit labour costs. The end result of all of this computerized arithmetic is that the net returns of processing each block can be estimated. The line between a positive return, and a negative return, is the limit of what is profitably mineable; an optimal mine design can then be developed: the "sugar cubes" that contribute to profitability are processed, the others are not.

The important point for present purposes is that these "volume sensitive taxes" (to use the terminology of the White Paper) raise the cost of processing each block, and therefore convert some blocks from ore into waste. If the effect is severe enough, the project may be abandoned entirely. Even if this does not happen, the increased taxes can still be extremely pernicious, since they can lead to a substantial reduction in the size of the orebody, and hence a shortening of the life of the mine. Profits are reduced, or disappear entirely, and with those go the jobs and potential tax revenues, as well as the enormous economic spin-off created by each individual mine in the province.

It is important to emphasize that these are not hypothetical academic musings, but an urgent current reality. One property that is, through some miracle, still operating, was last year a 20-year mine employing 650 people. It is now a 14-year mine employing 350 people. What this means, in practical terms, is that in a small town in the Interior, where alternative employment opportunities are limited, 8,100 person-years of direct employment have evaporated. The indirect effect on jobs, through forward and backward linkages, to local merchants and so on, is difficult to measure precisely, but is unquestionably also very signifi-

cant. Those 8,100 lost person-years of work equal about two-thirds of the employment created in the building of the entire northeast coal and transportation megaproject. That may give you some measure of what has been lost at that one mine!

This experience is not unique either. Another mine, which is presently closed, was designed with an orebody of about 40 million tonnes in 1982 but was redesigned in 1983 with an orebody of only 23.6 million tonnes. This translates into a loss of about 2 years of mine life.

I am not saying that these decisions about mine design are not affected by all the aspects of the economic environment. Clearly, and I do not want to avoid this conclusion, world prices are a significant part of the problem. But the recent rapid increases in volume sensitive taxes certainly have played a major role in these decisions and have contributed to the overall effect. Therefore, it is useful to disentangle these various influences by pursuing a hypothetical question: **for an actual B.C. mine, holding all other considerations constant, what is the effect on mine life of a change of volume sensitive taxes?** As it happens, this question has been recently studied for one of the above-mentioned properties and we think the results are quite instructive.

The mine being discussed currently has operating costs of about $50 million a year. The particular question posed in the computer simulation study was this: What impact would there be on the life of the mine if electricity costs were reduced by about $3 million per year? In other words, with all the current actual circumstances in mind, an optimal mine design was developed by the computer. Then, with the specified reduction of electricity costs, the new optimal mine was developed, and the two designs were compared. The result was that 6.7 years were added to the expected mine life, which represents about 2,500 person-years of employment at the site, plus, of course, the spin-off employment, taxes, and economic benefits that would occur.

It is important to recognize that these results are not necessarily linear; that is, we cannot safely assume that a $1 million reduction in operating costs would add about 2.2 years to this mine's life. Nevertheless, this simulation study suggests an important conclusion: the impact of volume sensitive taxes on mine life is an important issue that deserves more attention that it has received to date.

One more facet of this computer simulation merits discussion. It is fairly obvious that a $3-million annual reduction of volume sensitive taxes would make this mine more

profitable, thereby benefiting the investors, the employees, the surrounding community, and the suppliers to the mine. But what would the net impact be on provincial revenues? On the one hand, the province would lose $3 million dollars annually over the base line life of the mine. On the other hand, the province and the federal government would gain revenues during the 6.7 years of additional mine life: property taxes, sales taxes, personal income taxes, corporate profit taxes, energy taxes, and savings on unemployment compensation and welfare expenditures are among benefits that would accrue to government.

We do not have the analytical skills, at this point, to calculate with accuracy what the impact would be but, on an undiscounted basis, the work we have done suggests the direct gains would more than offset losses; in addition, there are the above mentioned indirect gains derived from the longer mine life. In other words, for no net loss of revenues to governments over the life of the mine, about 1/5 of the jobs created in the construction of northeast coal can be virtually guaranteed!

What, then, are these volume sensitive taxes that I am talking about? There is the 7 percent sales tax which cost our industry more than $40 million last year. We calculate that, on a new medium-sized mine project - about $200 million - sales taxes account for an additional $5 to $6 million of construction costs, creating a definite investment disincentive. Furthermore, once a mine is operating, the sales tax on supplies and materials is a significant cost of operation. For example, at one property that separated out its sales taxes, they totalled about $500,000 per year, about 2 percent of yearly mine operating costs. It should be kept in mind that the goods on which we are seeking exemption from the provincial sales tax are already exempted from the federal sales tax as production machinery and equipment.

There is, then, the cost of energy in all its forms. In all cases, provincial taxes have contributed significantly to the problem. Unfortunately, it is not clear that the study of mine taxation in the White Paper has included all of these taxes. We assume they have not, and thus the return on investment for B.C. mines is likely substantially overstated.

Let me give you the example of the mine which uses large amounts of diesel fuel because it must generate its own electricity, due to its remote location. Between 1980 and 1984 the annual consumption of fuel for power generation remained virtually unchanged, yet the fuel taxes paid increased by 4.5 times - the equivalent of a growth rate of 46 percent per year. The mine in question had its fuel tax

go up from $156,000 to $711,000 in only 4 years, while the price of their product was declining.

Overall, the mining industry paid about $7 million in provincial gasoline and fuel oil taxes in 1983, as compared with about $2 million in 1978.

Then there is the cost of natural gas. In August, 1983, the federal government reduced the natural gas and the gas liquid tax by about 32¢ per thousand cubic feet. Not only did the provincial government choose to not pass the reduction through to end users, it also added on a new charge of about 25¢ per thousand cubic feet. The mining industry in B.C. used over 5 billion cubic feet of natural gas in 1982, which means that the 25¢ surcharge cost our industry at least $1.4 million more each year.

In addition, in July 1984, the provincial government confirmed its previously announced intention to bring natural gas prices up to 65 percent of crude oil prices by 1990. Assuming our industry continues to use about the same amount of gas, this new pricing scheme is projected to cost existing mines an average of about $8 million per year more between now and the end of the decade. This is particularly important to B.C.'s coal mines, which have to dry their coal - something not necessary in Australia. The gas to do that presently costs between $1.50 and $2.00 per tonne of coal: this will likely increase by 50 percent by 1990, during a time when coal prices are not expected to go up a commensurate amount.

Finally, we have the problem of hydro-electric costs which, for most of our mines, is the largest single item of operating expense after wages. A fundamental part of hydro cost increases has been the infamous water tax which cost the industry very little in 1980 but by 1982 was up to $17 million. It decreased in 1983 to $15 million, primarily because of mine closures.

Let me repeat: after labour costs, electricity costs are the single most important component of operating costs, and just as reductions in volume sensitive taxes can increase the life span of a mine, so too increases in such taxes can cause an early death. For the smelter at Trail, and for the nopes of any future investment in new smelters in British Columbia, the thought of significant increases in electricity costs and water taxes would certainly be fatal. Yet for 1984, the water tax went up another 22.6 percent, more than three times the rate of inflation.

It disturbs us that government spokesmen sometimes suggest that B.C.'s traditional low prices for energy are in some sense 'artificial' and undesirable. Other countries may have better ore grades, lower wages, or other advantages,

but our mining industry has traditionally counter-balanced these factors with efficient management, good productivity, and moderately priced energy. This is not, let me stress, subsidized energy: just moderately priced energy. Since energy has been inexpensive to produce in B.C. this has been a perfectly appropriate policy and it has served our province well. It is a policy worth continuing. It is a way of creating jobs and investment in B.C. and a way of making economic that which would not otherwise be economic: massive, low grade ore deposits.

I want to now go back to Mr. Curtis' White Paper. In its preface it states that proposed tax reductions should be analyzed in terms of the new permanent employment opportunities that will be created. So far as it goes, this is a perfectly appropriate criterion. However, it seems to us to carry the implication that new jobs are more valuable than existing ones. In light of the expense of social infrastructure that must often accompany new jobs, to say nothing of the human costs of changing careers and locations, it seems to us that the first priority of a rational tax policy should be to extend existing jobs wherever this is possible. Other things being equal, saving an existing mine from premature closure is a much more sure prospect than the hope that some higher grade mine will be discovered and development, or that some new pie-in-the-sky industry will find firm roots in B.C.

The other issue relates to the point that the possibility for major tax reductions, especially over the short term, is limited by the need to protect the quality of essential government services. Again, so far as it goes, this may be a perfectly appropriate principle. But it leaves unanswered an important question: What, under current circumstances, is the optimal size of the provincial budget deficit? A simple econometric model suggests that the budget would be in surplus if the unemployment rate fell below 8.2 percent. In other words, the structure of provincial taxes is already quite conservative. A similar conclusion emerges from an examination of the economic accounts for B.C. over the decade from 1972 to 1981. Furthermore, the rates for several taxes have been increased since 1981, so the structure of taxes is even more conservative now that it was previously.

We want to emphasize that we support a conservative fiscal policy. We believe it entirely appropriate for the provincial budget to be balanced, or even to show a small surplus, over the course of the business cycle. This is sound economics in a jurisdiction so dependent upon highly cyclical natural resource based economic activity. However,

we believe that under current economic circumstances some tax reductions would be an appropriate stimulus to recovery, even if they caused a modest increase in the current deficit. In other words, the current deficit is the product of high unemployment, not of a profligate fiscal policy, and thus it can be reasonably expected to shrink as recovery takes effect.

But will recovery take effect? It is my view that there will not be another new base metal mine opened in this province in this decade. Between now and 1990, in fact, more mines may close. I do not deny that the primary cause of this gloomy picture is world prices. But the Government of British Columbia can no longer deny that its taxation policies have a serious adverse effect on the continued operation of what are already marginal operations.

To go further, the signals our industry gets from the government - and I mean the real signals that impact upon the bottom line - suggest that the provincial Ministry of Finance is unconcerned about continued mine operation and new investment in mining in the province.

Let me give you some examples:

- a 22.6-percent increase for the water tax in 1984 - more than 3 times the rate of inflation, on top of incredible increases from 1980 to 1982;

- the increases in natural gas taxes, and the changes in policy, that will significantly increase gas costs during the remaining tough years of this decade;

- a 35-percent provincial government surcharge on Workers' Compensation hospital costs. This extra charge has never been justified or explained and is a direct but devious tax on business in B.C;

- a policy move by the government to tax new buildings and equipment that are incomplete - and thus not generating either cash flow or profits - retroactively, and after the highest Court in the province has pronounced on the matter;

- a refusal by the government to strike down, either by policy directive or by legislation, a move by the Assessment Authority to have the industry pay taxes on the roads that it builds by assessing them at full replacement cost - something that costs one particular mine an increase in its property taxes on the road from $16,000 to $350,000 a year.

And I have mentioned the repeated representations that we have made to the government for tax reform that have gone unanswered by action.

Mining is not an industry that asks that its transportation costs be subsidized the way prairie agriculture demands it; its not an industry that demands marketing boards to guarantee a market, and a price, for its product like much of agriculture does; it is not an industry that asks for massive investment subsidies, tariffs, or other kinds of government intervention. To the contrary, it is an industry that frequently is expected to build and maintain its own roads and airports, provide its own power, construct its own communities and otherwise provide for itself what society provides and pays for in the case of other industries. It is an industry that is prepared to pay its fair share of keeping the province and the country running, on taxes based on profits.

In today's circumstances, it is my submission that our "fair share" is a great deal less than what we are presently paying. If the Province of British Columbia - and if the Government of Canada - want to see this industry survive this decade, and thrive in the 1990s, both levels of government will have to back off from policies of unfair and inequitable taxation and give this industry, which has so much potential to do good for the country, some financial breathing room.

I want to end by bluntly telling you that the Minister of Finance's intention "to develop and introduce, during the next year or two, a limited number of reforms in the provincial tax system" will simply not be enough. It promises too little, too late. There are a number of mines that are, today, hanging by a thread of economic uncertainty. Our industry needs an immediate commitment by the government that tax relief will be coming in the next Budget, and that Budget will have to deliver substantial tax relief.

Just so there is no misunderstanding as to the magnitude of our request, I want to end by spelling it out to you in detail.

1. All production machinery and apparatus, replacement parts and consumables used in the mining industry should be totally exempt from the provincial sales tax.

2. The water tax should be eliminated in its entirety where the electricity it relates to is being used for employment purposes.

3. Fuel taxes used for production purposes should be eliminated.

4. Natural gas and electricity pricing should be fair, giving consideration where the energy is being used to create jobs and investment in the province.

5. Machinery and equipment should be removed from the property tax rolls. The ratio of tax sharing between non-residential to residential should be brought back to the 2-to-1 ratio.

   Mines that are closed down should be given a tax exemption of 90 percent of the property tax they would pay if they were operating.

6. The corporate capital tax should be eliminated.

Some, I know, will see this speech and remark that I am asking too much. I say to them that it is unrealistic to expect this industry, in which 19 mines have lost $395 million over the last two years, and which shows no prospect for an immediate recovery, to continue to borrow money to pay ever-increasing taxes to stay in business, to provide jobs, and to continue to show faith in its future, unless there is a positive response from government.

In a society such as ours each group must contribute to the overall well being of the whole. We have been able to do this in the past and are prepared to do this in the future.

We recognize that government has to weigh many competing constituencies against one another when reaching decisions. We also recognize the need to provide services to the people of B.C. and the necessity of paying for them. It is our view however, that the volume sensitive taxes and fees we have discussed, rather than contributing to the overall well being of the province in the long term, will be to the detriment of fiscal management.

These taxes as they apply to our industry are front end loaded and their effect, if they shorten the life of existing mines and force closures of operating mines, will be to reduce the level of taxation received from the mining industry in B.C.

Our proposals to the Curtis Commission are designed to establish an overall policy of taxation rather than ad hoc solutions to revenue requirements. These proposals will in effect allow our industry and other industries, including small business, to plan for the long term.

The benefit to the people of British Columbia will be a more stable and healthier economy. The government will receive a greater tax contribution from mining because our mines will operate for their natural lives and have the possibility of producing profit.

In these times when we question the certainty of so many things in our society we believe the stability of a fair and equitable tax policy is necessary for success.

I think any fair examination of this industry, and of its tax burden, will support me in my conclusion.

I began by talking of Cassandra, who, in Greek mythology, was given the gift, or the curse, of foretelling misfortune, but was never to be believed. Sometimes I feel that way, insofar as our government has failed to react to representation after representation. But surely the industry's losses speak for themselves; the closures are self-evident; the human dislocation tragic and well known.

Surely, now, the provincial government will listen, will act, and will try to preserve what remains of our industry. If they do not, and soon, we are all the losers!

TAXATION AND ECONOMIC DEVELOPMENT IN BRITISH COLUMBIA

Philip Halkett*

Introduction

The topic I have been asked to speak on today is Taxation and Economic Development in British Columbia. Although broader in scope than some on the agenda, it does have significant mineral tax policy implications. I will stress these mineral tax implications, within the broader perspective of provincial tax policy.

Since the first week of September of this year, the Minister of Finance of the Government of British Columbia, the Honourable Hugh Curtis, accompanied by two private-sector consultants and myself, has been travelling the province holding open public hearings on the topic of taxation and economic development. The paper you have in front of you, Taxation and Economic Development, was published by the Ministry as background to these meetings.

We have had 27 public meetings in communities large and small, with the 28th and last meeting being held today in Parksville, British Columbia. We have received approximately 300 briefs so far, from all sectors of society. The basic question we are addressing in this process of public meetings is **'Do certain taxes in British Columbia act as unacceptable barriers to economic and employment growth and diversity?'** As you can appreciate, we have received a fair range of views and opinions on this question.

How did we get to this point?

For me, it started in June 1982, when I was assigned the task of carrying out a public commitment the Minister had previously made. The Ministry was to undertake a comprehensive analysis of the tax burden faced by businesses in British Columbia compared with the tax burden businesses faced in other jurisdictions. After a lengthy tendering process, the consulting firm of Currie, Coopers and Lybrand (with their associates in Coopers and Lybrand doing the tax work), were given the job of doing the study. The approach used was to develop models of six representative firms, and to compare the taxes these firms would pay in selected jurisdictions. The firms and jurisdictions selected are shown in table 1.

---

* This paper was prepared by CRS staff from a transcript of Mr. Halkett's presentation.

Table 1

REPRESENTATIVE FIRMS AND JURISDICTIONS SELECTED FOR THE COMPARATIVE TAXATION STUDY

Sector and Industry Group	Type of Firm	Jurisdictions Compared
Primary		
Mining	Copper mine	B.C., Ontario, Arizona
Manufacturing		
Wood products	Sawmill	B.C., Ontario, Washington, Oregon
Metal fabricating	Machine shop	B.C., Ontario, Alberta, Saskatchewan, Quebec
Electronics	High technology firm	B.C., Ontario California
Finance	Trust company	B.C., Ontario, Alberta, Quebec
Service		
Hotels	Hotel	B.C., Ontario, Alberta, Washington

Initially, we had a long list with 20 sectors, or industry groups, down the left hand side and more jurisdictions on the right. However, we reduced it to this size to accommodate our budget.

The sector we are interested in today is mining, and the firm is a copper mine. We selected British Columbia, Ontario and Arizona as the jurisdictions for comparison, and developed a model of a copper mine for each one.

Mine Models

To give you a feeling for the models, I would like to spend a few minutes outlining some of their characteristics. The copper mines are all sixteen-year models: three pre-production and thirteen operating years.

British Columbia Copper Mine

The operation is an open pit mine in the Highland Valley near Kamloops. As is characteristic of existing properties in the region, the mine is a low-grade large tonnage operation utilizing the latest in high capacity mining equipment and concentrating technology. The mining operation is carried out by electric shovels, supported by a fleet of diesel electric haul trucks, electric rotary drills and support equipment. The concentrator uses froth flotation to produce a copper concentrate, with payable gold and silver values as well as a molybdenum concentrate. Both the copper and moly concentrates are trucked to Vancouver and shipped to Japan for smelting.

The copper ore in the region is one of the lowest grades mined world-wide. This disadvantage is partially off-set by moderate preproduction stripping requirements and low ore-to-waste ratios during production. Nevertheless, large tonnage open pit copper mining operations rely primarily on efficient and cost-effective operating practices to maintain their competitive position on an international scale.

Ontario Copper Mine

The Ontario copper mine is located in the Timmins area of northern Ontario. The mine differs significantly from the B.C. mine in that it is an underground operation, has a relatively high grade copper-zinc orebody with significant gold and silver values, and is considerably smaller in terms of mill-throughput tonnages. These differences are dictated by nature of copper ores deposits in northern Ontario.

The method employed to mine copper ore is a combination of cut and fill and blast hole stoping. Mineralization to the 1200-metre level is serviced by the main shaft. The second shaft, extending to the 800-metre level, is used for ventilation. An internal ramp system connects key production levels. Haulage from stopes is primarily by load-haul-dump units, with some rail car and slusher support. Ore is crushed underground and transported to surface using a skip system. There is a concentrator and the concentrate is shipped to Noranda, Quebec, for custom milling.

Arizona Copper Mine

Copper mines in Arizona, like those in British Columbia, are large tonnage open pit operations. Our model is located

in Pima County, just south of Tucson. It is a truck and shovel mining operation, with a flotation base concentrator which produces a copper and moly concentrate. It differs from the British Columbia mine in that it is larger in size, mines ore of slightly higher grade, requires extensive pre-production stripping, and has a high stripping ratio. These differences result from the ore occurrences and type of deposits.

Tax Calculations

I would now like to turn your attention to the results of the study. Since the physical characteristics of the copper mines vary dramatically, tax levels were calculated using two approaches. I want to stress this, because I think this is key to some of the methological problems we encountered. The two approaches we used in calculating tax were what we called the actual case and the theoretical case.

In the actual case approach, each jurisdiction's firm is taxed in its own jurisdiction. For the mine that is unique to B.C., the actual taxes in B.C. were calculated. For the mine that is unique to Ontario, the Ontario taxes were calculated, and for the Arizona mine, the Arizona taxes were calculated. So you have three different types of mines each in different jurisdictions with unique tax systems.

There are two theoretical case approaches. The first, which I will call 2a, would be to take the Ontario tax system and move it to B.C. and calculate the taxes the representative unique B.C. copper mine would pay. Similarly, you take the Arizona tax system, and calculate the taxes the B.C. mine would pay. In 2b, the other theoretical case approach, a non-British Columbia mine is taxed under its own and British Columbia's tax legislation. This is the reverse of 2a. Here, you take the Ontario mine, move the B.C. tax system to Ontario, and calculate the results.

Actual Case Tax Calculations

Since the actual case approach was developed using representative mines with different operating and revenue characteristics, taxes cannot be compared using dollar totals of taxes. Instead, taxes borne by the mines are compared by way of an income-based measure and an expense-based measure. As you can see in table 2, we ran two ratios. The first is total taxes (which, as the footnote indicates, includes appropriate resource levies, royalties, and fees)

expressed as a percentage of net income before all taxes. The second measure is total taxes expressed as a component of total expenses plus income taxes. The denominator of the first measure contains no tax. The second denominator includes all the taxes. The numerators, Total Taxes, include what we called in the study fixed taxes, variable taxes, volume-sensitive taxes, and income taxes. In the second measure, we were trying to set a feel for the tax burden as a component of total expenses.

Table 2

JURISDICTIONAL RANKING OF TOTAL TAXES-AVERAGE PROFIT YEARS(S)

Jurisdiction	Total Taxes[a] as % of Net Income Before All Taxes	Total Taxes[a] as Component of Total Expenses plus Income Taxes
British Columbia	59.8	16.7
Ontario	59.6	22.1
Arizona	49.7	18.2

[a] including appropriate resource levies, royalties, and fees.

As an aside, I would point out that the water tax is included. The water tax is actually paid by B.C. Hydro, not by the firm, so what this reflects is hydro rates inclusive of the water fee. We did subsequently calculate the water component of the hydro cost. On the B.C. mine hydro costs represent approximately $1.8 billion in operating costs over the period; the water tax represents $90 million of it, or about 1 percent of the operating cost over the period.

Essentially table 2 shows that, over the 16-year period, Ontario and B.C. are comparable in terms of taxes as percent of before-tax income. Arizona ranks significantly lower. For the second ratio, keep in mind that we have expenses in the denominator. B.C. ranks lowest in terms of taxes as a component of total expenses. We spent many hours trying to explain this ranking difference, and finally came to the conclusion that the source of the dif-

ference is the fact that B.C. is saddled by two characteristics: high taxes, and high wages (high operating costs).

Theoretical Case Tax Calculations

Let us look at the results for theoretical case approach 2a, shown in table 3. The numerators and denominators are the same as in table 2, but here we have the British Columbia copper mine taxed in Ontario, B.C. and Arizona. In other words, we have standardized for differences in physical characteristics. The problem with these studies is that you have so many variables you have to decide which variable you want to isolate. In the actual case approach, we don't isolate, we throw everything into the pot and measure it. In this approach, we isolate the different physical characteristics and look at the pure tax characteristics.

Table 3

JURISDICTION RANKING OF TOTAL TAXES FOR B.C. MINE IN OTHER JURISDICTIONS - AVERAGE PROFIT YEAR(S)

Taxed In	Total Taxes as % of Net Income Before All Taxes	Total Taxes as Component of Total Expenses plus Income Taxes
British Columbia	59.8	16.7
Ontario	61.0	17.0
Arizona	54.1	15.4

The ranking is the same, as you would expect. The results show that Ontario has the higher burden.

Of course, from our perspective, the perspective of what I call provincial tax policy, we are not just interested in the copper mine; we are also interested in the saw mill, the trust company, the hotel and the machine shop. We are interested in tax policy, not mineral tax policy.

There are many tables in Taxation and Economic Development which you can review at your convenience. Ones I would draw your attention to are Tables A2, A3, and A4 in

the appendix which show respectively the comparison of fixed, volume-sensitive, and income taxes, which are summarized for the copper mines in table 4 below.

Table 4

COMPARISON OF VARIOUS TAXES - COPPER MINES IN THEIR OWN JURISDICTIONS

Jurisdiction	Fixed Taxes[c]	Volume Sensitive Taxes[a]	Income Taxes[b]
British Columbia	3.8	5.9	40.6
Ontario	2.3	2.8	54.5
Arizona	4.3	3.0	39.1

[a] property taxes and corporation capital taxes, as a percent of total expenses.
[b] taxes which vary with volume of inputs or gross revenues (e.g. fuel taxes, payroll taxes, sales taxes, excise and tariffs, etc.), as a percent of total expenses.
[c] as a percentage of income before income taxes.

You see that volume-sensitive taxes are a high component of total expenses in B.C., compared to the other two jurisdictions.

Policy Applications of the Tax Calculations: Four Major Questions

Governments get a lot of pressure to lower taxes selectivity on one industry sector or another. Of course, the question one is always asking is: What is the net effect of all taxes? As you can see, while British Columbia has high taxes on volume-sensitive items, we have relatively low income taxes on mining, and middle-of-the-road fixed taxes. Arizona does not rely as heavily on volume-sensitive taxes, but they do rely heavily on property taxes. There are different ways of raising money in the various provinces and states. One of the main purposes of this study was to try to get an overview of various tax regimes and their impact.

1. Are Taxes a Barrier to Growth?

Let me now identify some of the basic tax policy issues which the government in British Columbia must take decisions on. Is there evidence that the tax burden in British Columbia acts in certain instances as a barrier to economic growth? If so, which taxes present undue barriers? If some taxes do act as barriers, how much on a net basis should they be changed? In other words, the government has a number of options. Do they take it all into the deficit? Some of it?

2. Where Do We Make Up the Difference

The next question, assuming that we have identified taxes that are barriers to economic development, is how much is the government willing to forego or to spend. One option is to take any tax shortfall resulting from change into the deficit. Another is offsetting taxes.

We could increase corporate income taxes. We have heard repeatedly on the tour that in B.C. the main problem is too many fixed and volume-sensitive taxes. A lot of people say they would be willing to pay more corporate income tax. I must have heard 150 times: "We want to pay more income tax. Taxes on income are the way to go. You have biased your system too heavily toward fixed taxes and volume-sensitive taxes". However, the problem with moving on the income tax side is that we already have the highest corporate rate in Canada, 16 percent. Alberta has lowered its small business rate to zero and their major rate to eleven percent. Raising the spectre of tax competition, Ontario obviously started the trend with their tax-free holiday.

Another problem we have is that we do not want to leave the federal/provincial tax collection agreement. I think tax collection agreements are very good for the system. I was most unhappy personally to see Alberta leave the tax collection agreement for corporate taxes.

Furthermore, the federal government has been using the income tax system as an instrument for economic development, and has largely eroded the corporate tax base of the provinces. The base for provincial corporation income tax is very small compared to what it used to be. From the point of view of the federal government, this behavior is quite rational: that is their policy goal; they have to compare themselves with other countries, and most other industrialized companies have the same kind and level of in-

centives in their corporate income tax systems. However, the implication for us, assuming that we wish to balance the budget, is that we have to rely on fixed and volume sensitive taxes, as we have done.

We could increase personal income taxes, and we could increase other taxes. One of the interesting questions we kept asking at the public meetings is: "If you don't like this tax, which one do you like?" We got a lot of dead air on that particular question.

3. Which Taxes Should We Change?

Moving onto to the third issue, assuming some taxes in B.C. act in certain instances as a barrier to economic growth, which taxes should be changed? We could change fixed taxes, volume sensitive taxes, or income taxes. The consultations were not as helpful as they might have been, in the sense that we were told in total that we should change all taxes, and of course that is difficult to accept. So we have the question facing us of which instrument do you use, which tax do you increase and which do you decrease. Or, we could take a second course, and design new twists and turns, and introduce tax changes which are directed at encouraging new investment. In other words, we could leave the existing burdens where they are, and use the proceeds to encourage people to come to British Columbia and invest, by creating massive incentives for new investment. There are a number of options there.

Another issue is the question of tax changes which benefit one sector, or those which benefit a number of sectors: what I call tax neutrality versus picking winners and losers. I would argue that massive incentives through the tax system such as we have with Scientific Research Tax Credits (SRTCs) are extremely wasteful. There has been a billion dollars lost through the tax system on SRTCs, supposedly trying to encourage $2 billion of research. I would suggest that the billion dollars which is lost through the tax system is going to have to be made up somewhere, on the backs of other businesses and individuals.

The central issue that we are wrestling with in B.C. is: do you make neutral moves, i.e. moves that could affect any and all sectors, such as property tax changes, to improve the overall tax environment? Or do you make industry-specific moves, such as something for high tech, or for saw mills, or for mining?

4. What are the Implications of Possible Changes?

The fourth question we are addressing is: if the tax burden is too high, and if the fiscal regime is changed to remedy this, what will be the results? Governments must always be prepared to defend their actions, particularly in the case of proposals for tax change. What we were looking for on our consultation tour was information for just such a defence: for example, evidence that certain moves would maintain existing jobs, create world-competitive industry, result in new investment and new jobs, and create confidence. I think a large factor in Canadian economic problems is confidence, and any tax move would have to take due consideration of that fact. So, while I have no answers this morning for these policy questions, I would like to table them as my contribution to this discussion.

PROVINCIAL AND INTERNATIONAL TAX COMPARISONS IN THE MINERAL INDUSTRY: SOME PRELIMINARY FINDINGS

Roberta Albert

The Canadian mining industry has often contended that the combined level of taxes in Canada (federal and provincial income taxes and provincial mining taxes and/or royalties) is detrimental to the industry's competitiveness in world mineral markets. As a result, the Department of Energy, Mines and Resources is undertaking a comprehensive study of the taxation of the non-energy mining industry in Canada and in other countries with significant mining activities.

The objective of the study is to analyze the tax regimes of Canada and certain foreign jurisdictions in order to compare the impact of major taxes on the competitiveness of the mining industry in the countries selected. Income taxes and royalties are included in the study. However, indirect taxes and non-profit levies are not.

The study centres on the statutory regulations of each jurisdiction. However, in some developing countries, mining is often a large contributor to the national economy and a major source of foreign exchange. These countries often adopt a preferential and negotiable level of taxation in order to attract investment. Individual projects may be subject to specialized tax arrangements that have little in common with statutory tax provisions. We will eventually include some of these agreements in our study.

The relative impact of Canada's mineral taxation systems vis-à-vis those of its major competitor nations has been quantified. In order to measure the effects of taxation, hypothetical copper-gold mine-mill models have been employed. A major mining company has assisted us in updating our models to reflect 1984 capital and operating costs. Mineral outputs, capital inputs, operating costs and prices are held constant in each jurisdiction so that the only changes in after-tax cash flows are due to the impact of taxes. An inflation-free environment is assumed for the duration of the project.

Comparisons on an after-tax basis have been made of rates of return on investment (IRR), of the net present values (NPV) of cash flows, and the time profile of the payments. The taxes due, IRRs and NPVs have been calculated on a separate entity basis. Canada's flow-through results have also been calculated.

There are many problems in a comparison which involves the imposition of foreign tax regimes on a mining model located in Canada in order to ascertain the effects on taxes payable, IRRs and NPVs. One difficulty is that the entire range of government interventions, other than income taxes, which should be considered. Another major concern is the use of a standard model to determine the effects of taxes. Deposits in each country have different costs and revenues which some critics feel should be taken into consideration in each evaluation. However, changing the methodology to incorporate different costs and revenues would make true tax comparisons very difficult. Such a change would involve a complete competitive position study. Nevertheless, in this study the assumptions for the mining models are held constant with the mines located in Canada and the tax regimes of foreign countries essentially 'imported' to measure their impacts for comparative purposes.

This paper presents some of our tentative findings to date. It has been prepared solely for discussion purposes and your comments are welcome. For Canada, comparative studies have been substantially completed for the provinces of Quebec, New Brunswick, Manitoba, and British Columbia. Any changes in legislation are incorporated into the comparisons to keep them 'fine-tuned' to provide the most up-to-date results. The other tax systems we will look at today include those of South Africa, Australia, Indonesia, Zambia and Peru. It should be noted that the United States has not yet been included due to problems in choosing the optimum deductions under their complex rules.

Provincial Comparisons

In Canada, two mine-mill models have been used to assess the impact of taxes on rates of return and net present value. The first model, UGCM, is a marginally-profitable, medium-sized, underground mine-mill operation. It provides $18.2 million in operating profit annually, for a 20-year total of $364 million. It requires $90.2 million to acquire the initial assets and the before-tax internal rate of return is 16.1 percent.

The second model, OCM, is a profitable, large, open-pit, mine-mill operation. It provides $114.3 million in annual operating profit for a 20-year total of $2.3 billion. The model requires $326.5 million in initial asset investment and its before-tax internal rate of return is 28.7 percent. Both mine models have a three-year preproduction period.

Table 1 summarizes the internal rates of return (IRR) for these two models operating on a project basis in four provinces, on a before and after tax basis. The internal rates of return vary from 12.5 percent in B.C. to 13.8 percent in Quebec for UGCM, and from 21.8 percent in B.C. to 23.0 percent in Quebec for OCM.

Table 1

INTERNAL RATES OF RETURN, 1984 TAX PROVISIONS
(percent)

	UGCM	OCM
Before tax	16.1	28.7
After taxes in:		
British Columbia	12.5	21.8
Manitoba	13.0	22.3
Quebec	13.8	23.0
New Brunswick	12.9	22.9

The IRR can be directly related to the effective tax rates in each province which are shown in table 2. Quebec has the highest IRR in both instances and one of the lowest tax rates. The comparatively low tax rates in Quebec are the result of the low provincial corporate income tax rate of 5.5 percent. B.C. has the highest tax rate for the UGCM model due to high provincial income taxes. Based on previous provincial comparisons which used older models, we would expect Ontario to have the highest tax rate with the more profitable OCM model, due to its graduated mining tax scale.

The basic assumption underlying flow-through calculations is that the mines have been initiated by existing producers who are able to take advantage of the available tax incentives immediately. In order to compare taxes under a flow-through and project basis, we have isolated the tax payments in the province of British Columbia in table 3.

Table 2

TAXES AS PERCENT OF ACCOUNTING INCOME, PROJECT BASIS, 20-YEAR PRODUCTION PERIOD

	Provincial Mining Taxes	Provincial Income Taxes	Federal Income Taxes	Total Taxes
UGCM:				
British Columbia	11.6	14.4	18.9	44.9
Manitoba	10.1	10.1	19.5	39.7
Quebec	11.8	3.4	18.9	34.1
New Brunswick	13.8	10.4	16.9	41.1
OCM:				
British Columbia	13.9	15.1	22.2	51.2
Manitoba	13.4	10.9	22.5	46.8
Quebec	21.2	3.7	22.2	47.1
New Brunswick	15.2	11.1	21.0	47.3

Table 3

BRITISH COLUMBIA TAXES ON FLOW-THROUGH AND PROJECT BASIS
($ million)

	Flow-through	Project
UGCM:		
Federal income tax	48.4	48.0
Provincial income tax	36.8	36.5
Provincial mining tax	28.7	29.3
Total	113.9	113.8
OCM:		
Federal income tax	402.6	400.4
Provincial income tax	272.8	271.4
Provincial mining tax	249.7	251.7
Total	925.2	923.5

The total dollar amount of taxes on a flow-through basis is similar to that incurred on a project basis. Total taxes for B.C. UGCM on both a flow-through and project basis are approximately $114 million; total taxes for B.C. OCM differs by $2 million from $923 million to $925 million.

However, table 4 shows that there are major differences when the present value of taxes at 10 percent is calculated.

Table 4

BRITISH COLUMBIA, PRESENT VALUE OF TAXES, AT 10 PERCENT
($ million)

	Flow-through	Project
UGCM:		
Federal income tax	(1.8)	10.7
Provincial income tax	5.2	9.3
Provincial mining tax	6.6	7.3
Total	10.0	27.3
OCM:		
Federal income tax	80.5	108.2
Provincial income tax	70.7	79.4
Provincial mining tax	71.5	72.9
Total	222.7	260.5

A $17-million difference arises in the PV calculations for B.C. UGCM and a $38-million difference arises in the PV calculations for B.C. OCM. In all cases, taxes on a flow-through basis are lower.

The discrepancies reflect the time value of the tax incentives under the flow-through basis. The negative federal income tax amount of $1.8 million for UGCM operating in B.C. results from the present value of the tax benefits, as used by the existing parent company in the preproduction stage to reduce its taxes, being greater than the present value of the tax payments made by the project throughout its 20-year production span. This 'over compensation' is most significant for mines which are marginally profitable on a stand-alone project basis. In many instances, a 'no-go' decision for a project may be changed to

a 'go' decision if flow-through of tax incentives to an existing producer is available.

The internal rates for UGCM and OCM operating on a flow-through basis in B.C. are 20.0 percent and 30.9 percent, respectively. In both cases, the tax savings resulting from the immediate flow-through of deductions increase the rates of returns.

International Comparisons

Now that the Canadian scene has been examined briefly, a selection of foreign countries will be presented. We will take a look at some major or innovative mining provisions of these countries and then we will compare results for the OCM mine-mill model.

South Africa

The present tax rate for base metal operations in South Africa is 42 percent of taxable income with a 10-percent surcharge, for an effective rate of 46.2 percent.

There are tax incentives for state-assisted gold mines and for gold mines which fall under the definition of 'small gold mines'.

There is no state income taxation in South Africa although state lease payments are exigible.

In lieu of deductions for wear and tear, rights, patents, and certain allowances granted to manufacturing concerns, mining operations are allowed to deduct from income a 'redemption allowance'. The 'redemption allowance' is a full deduction of capital expenditures from income in the year in which they are incurred. This deduction is allowed only from 'income derived from mining operations' and only from income from the particular mine for which the expenditures were made. Capital expenditures include all expenditures on shaft sinking and mine equipment, and expenditures on development, general administration and management prior to commencement of production or during any period of non-production. It also includes an additional capital allowance at the rate of 10 percent on unredeemed capital expenditures in the case of gold mines.

A 'super-allowance' in the form of a deduction equal to 20 percent of the cost of machinery and 15 percent of the cost of buildings involved in the 'beneficiation process' is allowed.

Costs which are not deductible include the purchase costs of mineral or surface rights.

Australia

Australia also gives special attention to its gold mining industry. In order to attract and keep investment capital in its low-grade gold mines, the government does not levy income taxes on gold mining operations. (Gold mining is defined to occur when more than 50 percent of a mine's gross income is from gold or when more than 40 percent of a gold-copper mine's gross income is from gold.)

In an effort to encourage exploration, prospectors are exempt from tax on profits from the sale of rights to mine for gold and certain prescribed minerals.

The basic corporate tax rate in Australia is 46 percent. State governments levy royalty payments on mining ventures and, as there are a variety of bases and rates, the payments vary substantially. Revenues and deductions may be 'pooled' within a mining company for Australian income tax purposes.

Rules for deducting capital expenditures are as follows.

1. Expenditures on exploration or prospecting for minerals are fully deductible in the year against any income. Any amounts not deducted may be carried forward indefinitely.

2. Capital expenditures are deductible by amortization over the remaining life of a mine at year-end. The qualifying capital expenditures for the 'life-of-mine' deduction includes development works, mine/mill machinery and equipment, infrastructure costs, employee housing and the costs of acquiring a mining or prospecting right. There is an option to deduct expenditures on machinery and equipment by way of ordinary depreciation which is 33 1/3 percent straight line. These expenditures can earn an 18-percent investment allowance provided they are ready for use by June 30, 1986.

Following its election in March 1983, Australia's Labour Government introduced a resource rent tax (RRT) in respect of certain mineral-based activities. The RRT is related to profits and is clearly designed to derive '... an appropriate share of the large returns that can be associated with the development of particularly rich mineral deposits'. At the present time, the RRT is aimed at new projects in the petroleum sector, but the Australian government has not ruled out extending the tax to mining projects.

The RRT is essentially a flat-rate royalty of 40 percent on cash production profits of a resource project after recovery of the project's exploration and capital costs and an imputed cost of capital at 20 percent for costs not yet recovered. It is a form of excess profits tax on successful projects. The RRT is deductible in computing corporate income tax.

Indonesia

There are three basic taxes imposed on the Indonesian mining industry: corporate taxes, royalties and land rents.

In the first ten years of commencement of production of a mill, the corporate income tax rate is 35 percent. This rate jumps to 45 percent for the remainder of the productive life of the mine.

Depreciation may be claimed at 10 percent to 12.5 percent per annum on depreciable expenditures. Mining companies may claim as accelerated depreciation an additional amount of 10 percent for buildings and 25 percent for equipment. This may only be claimed once but total depreciation cannot exceed the cost of the asset. Mining companies are permitted to deduct an investment allowance, totalling 20 percent of capital expenditures, in equal amounts over four years.

Contracts of work may provide for slightly higher rates and tax credits. Land rent and royalties are deductible for income tax purposes.

Zambia

The Zambian mineral industry is subject to three levels of taxation: income taxes, mineral taxes and mineral export taxes. Income taxes are exigible at 45 percent and mineral taxes at 51 percent. As mineral taxes are deductible for income tax purposes, these two combine for an effective tax rate of 73 percent. A company is entitled to a refund of mineral taxes in respect of any prescribed three-year period beginning with the first year in which mineral tax is paid. The amount of the refund is equal to the difference between (a) 12 percent of the average equity and (b) the average residual income, after the deduction of both mineral taxes and income taxes.

Mineral export taxes, which are not deductible for income tax purposes, are charged at 8 percent of the amount realized from an export sale.

Expenditures on prospecting and exploration may be deducted as operating expenditures from any income for tax purposes. Expenditures not deducted may be inflated by 10 percent each year.

Capital expenditures on development and production assets may be written off to the extent of income, or 100 percent. Residual capital costs may also be increased by 10 percent each year.

Peru

The Peruvian tax rate is graduated from 32 percent to a maximum 57 percent on income above $3.7 million. There is a tax credit system and taxes on mining operations are subject to relief if metal prices fall below certain levels. Mining companies must pay for land rights as well as 1 percent of profits to the Institute of Geology and Metallurgy.

The cost of mining rights may be amortized over the lesser of the expected life of the mine or ten years. Prospecting and exploration expenses may be deducted in the year incurred or amortized over the life of the mine. Development may be deducted in the year of expense or amortized over three years. There is some accelerated depreciation allowed at a rate of 100 percent of investments made. Normal depreciation rates for the mining industry are 20 percent for machinery and 10 percent for buildings.

Gold mining is subject to exemptions from income taxes.

Results of Comparison

The OCM model was used to calculate taxes and internal rates of return on a project basis in each of these foreign jurisdictions. The results are shown in table 5. The IRR for OCM operating in the province of B.C. rates favourably in this comparison; but perhaps of more significance is the fact that the results are fairly similar for all countries. This may be different on a flow-through basis, but we do not have sufficient information as yet on flow-through provisions in foreign jurisdictions to make comparisons at this time. Canada, as we have seen, has very favourable flow-through provisions.

Table 5

SUMMARY OF RESULTS, OCM (1984) MINING MODEL, PROJECT BASIS AFTER TAX

	IRR (percent)	NPV ($ million) at 15 percent	NPV ($ million) at 20 percent	Effective Tax Rate (percent)
OCM before tax	28.7			
Indonesia - regulated	22.8	111.2	30.5	42.3
South Africa	22.3	100.8	24.4	44.9
Indonesia - contract of work	21.9	100.0	21.2	43.3
Canada (B.C.)	21.8	89.9	19.3	51.2
Australia	21.4	87.8	14.5	47.3
Zambia - excluding export tax	19.5	51.2	(4.4)	64.4
Peru	17.6[a]	(33.7)	(23.9)	60.1
Zambia - including export tax	10.3[b]	(43.5)	(72.1)	86.6

The NPV and IRR calculations have not been risk adjusted. Nor have fluctuating income conditions been introduced. Due to the relative stability of the Canadian economy and to our favourable treatment of loss carryovers, we would expect Canada to maintain, if not improve its standing, if risk and income fluctuations were included.

Figure 1 records the time profile of tax payments in these jurisdictions. This chart reflects the fact that most of the countries provide for the write-offs of initial expenditures before significant tax payments are required. As a result, tax payments are typically minimal in the first

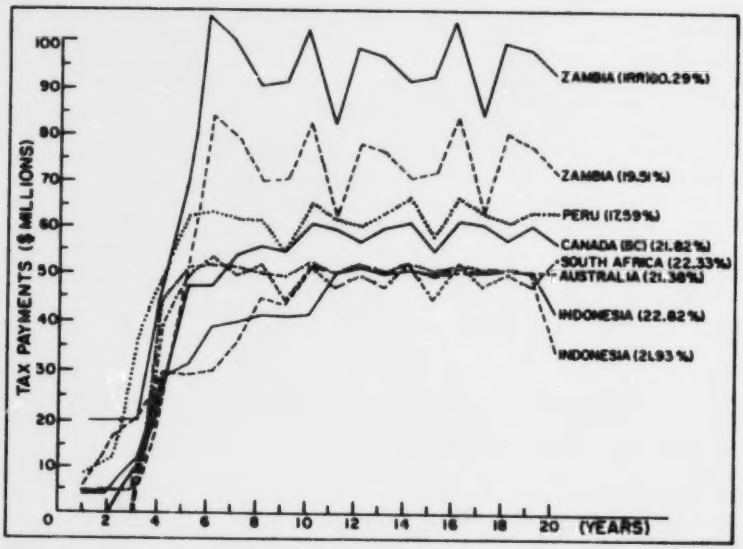

Figure 1. Time Profile of Tax Payments in Six Jurisdictions

five years of production, but by year six the top level of tax payments has usually been reached and this level continues throughout the production period.

Statutory tax rates are very similar. Australia, South Africa, Indonesia and Zambia have income tax rates of 45 percent to 46.2 percent. Canada's federal income tax rate is 36 percent and provincial income tax rates vary from 5.5 percent to 16 percent. Other taxes, such as Zambia's mineral tax and export tax, can raise the overall tax rates considerably.

Canada's full, immediate write-off of exploration and development expense appears to be in line with the practices in other countries. Canada's capital cost allowance regulations in respect of mining assets, of 30 percent of cost against any income, with provision for up to 100 percent of cost to the extent of mining income, also compares favourably with the treatment in other countries, though many of the countries do not have investment allowances which permit asset write-offs of up to 120 percent.

Some of the foreign tax regimes contain unique features. Zambia provides for the compounding of all expenditures by 10 percent of the costs not yet deducted for tax

purposes. South Africa also provides a compounding feature. The compounding is allowed to offset the effects of inflation on asset write-off. The Australian Resource Rent Tax also provides for the compounding of asset values not yet written off for tax purposes.

Australia, Indonesia and Peru all have special incentives for gold mining. These incentives were originated to aid in the development of far-flung, yet profitable, gold mines which assist in the stabilization of the currency of these countries. Canada provided direct financial assistance to its gold mining industry for about 25 years prior to 1971 through the Emergency Gold Mining Assistance Act.

Many countries reduce import duties in the first several (usually ten) years of production.

Mining Development Agreements

Any study of international taxation of the mining industry must examine the area of agreements between host countries and transnational corporations that invest in, develop and operate mining projects in foreign countries, especially developing countries. A colleague and I recently spent four days at the United Nations Natural Resources and Energy Division at the invitation of Dr. Thomas W. Walde, the UN Interregional Advisor on Mineral Development Legislation. We obtained a substantial amount of research material on agreements and we will deal with this subject in depth in our international tax study. Because of time and space constraints my comments on this subject today will be brief and general.

Mining development agreements have shown a change in pattern in the last two decades from a traditional mining concession based on a fixed royalty or other simple payment to the host government for mining rights to complex concession involving profits-based taxes. Other forms of agreements have evolved including production sharing agreements, service contracts and joint ventures, usually with the host country or a state-owned enterprise.

The agreements reflect an effort by the parties to maximize their specific interests. The host country's objectives include maximizing and stabilizing revenues, maximizing foreign exchange earnings, optimizing the exploitation of deposits, providing economic spin-offs such as job creation, acquiring technical know-how and retaining ownership of the resource base.

The transnational mining company wishes to make secure investments, maximize profits, obtain secure supplies

of ores, use its technical know-how, maintain its market position and repatriate funds.

A third but important player, who is usually not a party to the agreement, is the international banker or financier who has considerable influence on the financial and even operating terms of the agreement in order to protect his investment and the ability of the mine project to repay borrowed funds plus interest.

Agreements have evolved so that they now generally include the following areas of interest.

1. Expressions of sovereignty over natural resources. There has been an increasing trend by host countries to retain ownership and control over the mineral rights in a formal, legal, sense, although not necessarily in a practical sense. One agreement, for example, specifies that 25 percent of a mineral right being explored reverts to the host country each year for three years.

2. Staged development of the project, with opportunities for both the foreign investor and the host country to re-think their initial decisions to proceed.

3. Financial provisions that substantially reduce the risk to the foreign investor and/or foreign financier by accelerating financial returns in the early years of production. This is frequently provided by tax holidays or provisions to recover capital before significant taxes are exigible (as in Australia's RRT).

4. Higher government 'take' in the later years of a project's life, either through higher taxes or greater government equity, after the foreign investor has had an opportunity to earn a reasonable return. Foreign governments have come to recognize that they can exact a higher economic rent, in the form of income taxes for example, than they exacted two decades ago in royalty based concession agreements that were extremely generous to foreign investors.

5. Decision-making procedures related to major aspects of a project which retain effective control in the hands of the investor regardless of the nominal distribution of shareholdings between the host government and the investors. There is a somewhat subtle trade off here whereby the host country relinquishes de facto control for higher economic benefits in the form of higher royalties or taxes.

6. Increasing emphasis on socio-economic aspects such as hiring and training nationals, sharing technical know-how and protection of the environment.

7. Dispute-settlement procedures that preserve the host country's position of legal sovereignty but that give effective arbitral authority to a person or body outside the host country.

The last point brings out the basic premise underlying the agreement - that is, the interdependence between the host country and the transnational mining corporation. Host countries need the mining companies to change their resource endowment into liquid assets and to exploit their mineral deposits efficiently. Mining companies need the host countries in order to produce and supply minerals and products to markets in developed countries.

The terms of the agreement related to profits and the sharing of same are crucial to both parties. The host country's taxation regime is perhaps the most important element of its national mining policy since it works to encourage or constrain investment and to realize its policy objectives.

Historically, the fiscal aspects of agreements have undergone major changes. In early concession arrangements, the host country imposed little or no income tax and collected minimum royalties based on physical production rather than value. The transnational corporation captured all or most of the profits, including windfall rents, while providing the host country with the minimum revenues it demanded to allow the corporation to exploit its resources.

As agreements evolved and as host countries moved to exact a larger economic rent, the fiscal provisions of agreements became more varied and complex. The following is a list (not to be considered exhaustive) of fiscal provisions that affect the amount and timing of revenue sharing by the parties:

1. corporate income tax, usually at a flat rate of approximately 50 percent;

2. excess profits tax on windfalls, e.g. Papua New Guinea levies a 70 percent tax on earnings above a 20 percent accumulation rate;

3. royalties, in kind or in cash, frequently on an ad valorem basis, e.g. Indonesia employs a sliding scale royalty based on the value of sales;

4. rentals on land acreage;

5. export taxes, usually ad valorem;

6. accounting procedures to measure taxable income and prevent transfer of profits through transfer pricing;

7. a production levy based on the value of the finished product was pioneered by Jamaica to prevent transfer pricing in a vertically integrated aluminum company. (The tax on bauxite production was related to the average market price for aluminum);

8. withholding of taxes on dividends or other repatriation of funds.

Fiscal provisions that are concessionary in nature include:

1. tax holidays, usually during the start up period;

2. preferred corporate income tax rates for the life of the project or for some definite time frame;

3. exemption from import duties on capital goods required for investment in a project;

4. generous loss carry-forward rules;

5. accelerated asset write-offs;

6. guaranteed exemption from new or discriminatory taxes;

7. tax rates geared to a corporation's home country corporate rates so that the investor corporation will receive full foreign tax credit in its taxing country of residence;

8. infrastructure contributions, sometimes in exchange for equity. The host country may find it easier to raise loans from international organizations for infrastructure than for equity. The infrastructure contribution reduces the exposure of the investing mining company.

It should be noted that all of the taxing and concessionary provisions of an agreement override the general tax status of the host country; i.e. they have a 'notwithstand-

ing' status. This is the most significant limitation to making comparisons with other countries based on their statutory provisions.

Of special importance, and as a closing comment on agreements, it should be noted that virtually all agreements include a clause that provides that any term of the agreement may be renegotiated in certain circumstances, especially one that may threaten the continuation of mining operations. For example, one particular agreement contains a provision that the contract terms may be negotiated at the request of either party '... for improving the technical, economic and financial conditions of the project to make it viable'. Thus, if tax provisions became onerous they would probably be renegotiated to the mutual satisfaction of the parties. The provision to renegotiate underlines again the interdependence of the host country and the transnational mining corporation.

It should be noted that tax contracts have been negotiated in Canada between mining companies and certain provinces. Examples of this are the Saskatchewan and New Brunswick potash agreements and Nova Scotia's recent tin mining contract.

These briefly are our findings to date. In conclusion, we would like to take this opportunity to thank those officials of provincial governments and companies who so kindly took the time to review our model assumptions and tax calculations.

TAXATION POLICIES IN THE CANADIAN MINERAL INDUSTRY AN INDUSTRY VIEW OF FEDERAL PROVINCIAL TAX ISSUES

Keith Service

Introduction

The starting point in a discussion of federal/provincial tax issues is the delegation of powers in the BNA Act, which gives the provinces the mineral rights on Crown land within their borders, and the power to levy direct taxes. The provinces have been successful in extending the taxing power beyond income taxes and property taxes to various fuel and sales taxes. Royalties are indirect taxes and ultra vires for provinces, except where they are received by a province as landlord, i.e. as payment to the Crown for the resource. The ingenuity demonstrated by provincial governments in successfully arguing that hidden fuel taxes are not indirect taxes was applied in the 1970s to levy royalties on freehold land through complicated property taxes and income based taxes. In other words, there is almost no practical limit to the taxing powers of the provincial governments.

At the same time, the federal government has the power to levy any form of taxes and also has jurisdiction over interprovincial and international trade. There is obvious potential for competition between governments for taxation revenues, competition which can result in double taxation. This potential was in fact realized in the 1970s, because of a perception of large economic rents in the resource industry. The eventual result was a stalemate, culminating in the Federal-Provincial Resource Taxation Review in 1978.

The Constitution Act of 1982 granted the provinces the right to tax resources by 'any mode or system of taxation'. I am not aware of any province applying this extension of its powers to the taxation of the mining industry.

Resource Wars of the 1970s

With hindsight, there are many explanations for the events of the 1970s but I think they can be boiled down to two:

1. the accelerating expansion of government increased costs of governments; and, coincidentally

2. the resource boom of the early 1970s, which produced large industry profits identified by governments as economic rents capable of helping government to meet their own rapidly increasing costs.

The provincial governments reacted to the resource boom first, and in 1974 a flurry of legislation across the country introduced mineral royalties, the potash reserve tax, and income based mining taxes with graduated rates. The federal government was quick to perceive that its own revenue base was being eroded, and it disallowed provincial mining taxes and royalties as a deduction in calculating federal taxable income. Tax expense for the mining industry rose sharply, in some cases beyond 100 percent of pretax profits. The industry felt, in Bob Brown's apt description, like 'the ham in the sandwich'.

Just when governments began to realize they were progressing to a stalemate in the resource revenue competition, the resource boom ended and the mining industry entered a period of decline. The resource wars of the 1970s really came to an end with the 1978 Federal Provincial Review and the ensuing publication of a joint report. I suspect that since 1978 this remarkable document has been sinking gradually deeper and deeper in the filing systems of bureaucracies in the federal and provincial governments and in mining companies.

It is a remarkable document, because eleven governments supported its recommendations. I think it should be close to hand for all officials of the federal and provincial governments involved with the resource industry. It contains much common sense and represents such an obvious, common-sensical solution to intergovernmental disputes: get together and talk about it (preferably, before introducing legislation).

Where do we go from here

Before presenting some ideas about possible changes in taxation of the mining industry, I want to recognize the successes of the present system. The present income tax system for the mining industry was arrived at through trial and error, long hours of negotiations, and a lot of hard work by government officials and industry representatives. It is generally considered to be a good system: it recognizes the high risks of the mining industry through fast write-offs; it encourages exploration and development with a system of earned depletion; it even includes a rough agree-

ment on the division of tax revenues between governments in the form of the resource allowance. There are industry representatives who argue that the tax rates are too high, and there are government officials who counter that, with the write-offs enjoyed by the mining industry, the high rates are seldom applied. On balance, though, I think it is a good system.

The first recommendation I want to make returns to the point made earlier: we should keep talking, and try to resolve difficulties through negotiation rather than confrontation. The issue of resource taxation seems less pressing right now, in part because the resource boom is apparently over. But, as representatives of the mining industry pointed out during the resource boom of the 1970s, the industry is cyclical in nature and eventually will be profitable again. Governments should continue to meet to discuss issues of resource taxation, and they should involve the mining industry in these discussions.

A stable system of taxation is essential in order to attract further investment in mining. New mines require long lead times and large capital investments. Sudden changes in taxation can be disastrous to individual projects and to the confidence of mining executives. Again, this is a lesson that was learned in the 1970s but it bears repeating.

Federal/Provincial Harmonization

A major recommendation that I want to make is that the federal and provincial governments change direction and move towards greater harmonization of their tax system. By harmonization, I mean federal and provincial agreement as to what should be taxed, how tax should be calculated, and how the tax system should be administered and audited. Since World War II, Canadians except for Quebec residents, have been accustomed to an income tax system where provincial governments apply a provincial tax rate to the federal income tax base and rely on the federal government to administer the system. This is an approach that has served Canada well, but there are signs that it is breaking down.

An obvious symptom of this breakdown is the trend for provincial governments to administer their own corporate income tax systems. Quebec has administered its own corporate income tax since the Wartime Tax Agreements expired in 1946. Ontario has administered its own system since 1957, and Alberta since 1981. British Columbia has been

threatening for the past few years to administer its own corporate income tax system. This trend arises from serious disagreements between federal and provincial governments and among the provincial governments, in areas of both policy and administration.

A major policy difference of relevance to the mining industry, of course, is disagreement as to how resource revenues should be taxed and how the resulting tax revenues should be divided among governments. Even provincial income tax acts that are administered by Revenue Canada may contain specific adjustments for resource industries: for example, to disallow the federal resource allowance or to allow provincial royalties. Looking at corporate income tax in general, some provinces may disagree with federal changes to such things as the capital cost allowance system or flow through shares.

There is also competition among provinces to attract new investment. This competition may take the form of outright grants (witness the way Ontario and Quebec throw money at car manufacturers) or specific income tax incentives. Quebec has introduced a stock savings plan and an additional 66 2/3 percent deduction for individuals investing in exploration expense in Quebec. Ontario has three-year tax holidays for the income earned in Ontario by small businesses. The objective of the Alberta government in administering its own corporate income tax is to design a system that will 'over time, be more sensitive to Alberta's needs and objectives, enabling individual entrepreneurs in Alberta to more easily take advantage of the province's unique strengths and opportunities'.

For provinces that do not administer their own income taxes, there is frustration with the lack of attention paid to provincial income taxes by Revenue Canada. There is a feeling that Revenue Canada auditors often do not fully understand differences that may exist between provincial income tax acts and the federal Income Tax Act. As well, provincial governments suspect that the allocation of income among provinces is not examined carefully and this suspicion appears well-founded when visits by the Ontario auditors always seem to result in increased allocations in Ontario.

There has to be a better answer than 'fed-bashing' and parochialism. Criticism of the federal government has reached such a level of acceptance in the provinces that corporations are expected to join in. A typical response to representations to provincial governments on non-profit taxes such as sales taxes and property taxes is a suggestion that corporations should be happy to pay these taxes

because they reduce the federal income tax base. I don't feel any better about paying taxes to a province than I do about paying taxes to the federal government. And I am disappointed to see the rise in provincial bureaucracies, with the only apparent purpose being to abet their competition for tax revenues with the federal government or with other provincial governments, and the only result being an increase in the cost of doing business in Canada. Corporations operating in Alberta watched with fascination, as that bastion of free enterprise set up a mini-Revenue Canada, complete with a ruling department and publication of interpretation bulletins.

In my view, a better approach would be for the federal and provincial governments to work to maintain and strengthen a harmonious income tax system across the country. It would be better for Canada's economy, and for the provincial economies, if the governments were to rely on a stable income tax system with a common base, a system that leaves a sufficient income to business, so that all provinces can be perceived as attractive places to invest. The provinces, spared the huge cost of grants and tax preferences offered in the competition for new investment, would not have to tax existing businesses so heavily. And the business decision of where to locate truly would be a business decision.

With such a system in place, and the existing system is not far off it, policy differences would be settled by negotiation. The taxation of the resource industry is the main area where policy differences occur; furthermore, both the federal and provincial governments have authority under the Constitution Act to levy any form of tax on the resource industry. These factors combine to produce a stalemate which, I am hopeful, will force negotiation before major changes are made by any government.

The responsibility for administering and auditing such a system logically should be with Revenue Canada. (If we extrapolate present trends, there will be eleven audit authorities fighting over which province a geologist's salary should be allocated to.) This means that Revenue Canada would have to train auditors on provincial taxation issues and audit provincial allocations with the same care they apply to the calculation of taxable income.

With a new government in Ottawa, and a new Minister of National Revenue committed to making Revenue Canada responsive 'to the needs and fears of ordinary taxpayers', this should be an opportune time to achieve change in this area. Those provinces not yet committed to administering their own acts should meet with the Minister of National Revenue on these matters.

Economic Rent

It is impossible, in a discussion of federal-provincial tax issues, to avoid economic rent. That's what the governments are all fighting over. As this is a concept of economists, I quote an economist, so we will all know economic rent when we see it:

> It is a matter of common observation that mineral deposits being exploited at any given time are, for a multitude of reasons, of differing economic qualities. By and large, we would expect that a private firm exploiting even the poorest of these would do so only if it is obtaining a reasonable return from it. But in that case, the richer deposits are returning more than this reasonable return.[1]

The return in excess of this 'reasonable return' that is attributable to the quality of the deposit (not to superior management) is economic rent.

H.G. Grubel argues that, on an aggregate basis, rates of return in the mining industry are about the same as for manufacturing, so there are no rents. He admits that there are may be economic rent on specific projects but disagrees that governments should tax it away.

As a representative of the mining industry, I agree with Grubel. I acknowledge that there is economic rent on some properties but I do not think governments should attempt to tax it away. I hold this view for the following practical reasons.

1. The amount of economic rent is very difficult to determine. Previous attempts to tax it away have resulted in tax structures that, combined with other taxes, left no return to the shareholders.

---

1. R.D. Cairns, Canadian Tax Journal, 'Ricardian Rent and the Minerals Industry - The Debate Concludes', November - December 1980, p. 770. See also R.D. Cairns, 'Ricardian Rent and Manitoba's Mining Royalty', September - October 1977, p. 558 and H.G. Grubel, 'Ricardian Rent and the Minerals Industry: A Comment', November - December 1979, p. 689.

2. The present corporate tax system ensures that over 50 percent of any economic rent will be paid to governments anyway. The remainder of the rent is either reinvested or paid to shareholders who also are taxable. This seems to me not a bad deal for the public.

3. The main thing I have against taxing away economic rent is the concept of a 'reasonable' return. This concept is critical to economic rent, because profits above this 'reasonable' return are considered to be economic rent. The problem with this is that miners do not invest to earn a reasonable return, whatever that is. Miners invest in exploration and development because they hope to find one of those rich deposits with lots of economic rent, in anticipation of keeping what is left after regular income and mining taxes. Many of these deposits end up with no return at all to the investors, after years of operation by optimistic miners working to repay bank loans. I don't know where a nil return fits in the economists' definition of economic rent, but it certainly is not reasonable.

   The point is that without the incentive of the possibility of periodically making large profits, there is no incentive to keep exploring and working at those deposits that turn out to be less profitable than expected.

Despite these very sound and practical arguments against trying to capture economic rent, government keep trying to find ways to do it. The favoured methods for the mining industry are rate-of-return tax systems and Crown operations. Crown corporations will be tolerated by the mining industry as long as they compete on equal terms with other corporations. Rate-of-return tax (RAT) systems, despite ingenious efforts to resolve the aforementioned difficulties with capturing economic rent, are not likely to win acceptance by the mining industry.

Proponents of the RAT system stress that it is based on profits (therefore not as bad as gross royalties) and can be aimed only at economic rent; that is, that part of profits attributable to a rich deposit. They even leave, as in the Saskatchewan uranium royalty, a small part of the economic rent, as calculated by their formula, to the investors. It is also suggested that the system can include a very low total tax burden on poor deposits, thus making economic those poor deposits that otherwise would not be able to pay

ordinary income and mining taxes. Again, this is a very neat theory, but these rate-of-return systems still limit the return to investors to something not much more than a 'reasonable return' and thus remove the incentive for exploration.

In summary, I propose a stable income and mining tax system, with major changes being made only after negotiation between governments with representatives of the mining industry involved. I see the trend for provinces to administer their own income tax acts as increasing the cost of doing business in Canada for all industry sectors, including the mining industry, with no significant benefit to the public. And a final plea to all governments is please leave some of that economic rent, say the portion remaining after regular corporate income and mining tax, to the mining industry as incentive to explore and invest in Canada.

TAX INCENTIVES FOR JUNIOR MINING COMPANIES

Keith O'Brien

Introduction

The Prospectors and Developers Association

The tax incentives I will be discussing were designed and developed by the Prospectors and Developers Association, and it might therefore be useful to take a moment to discuss this organization. The PDA was formed in 1932 and has nearly 4,000 members: prospectors, developers, geologists, geochemists, geophysicists, executives of mining companies, students, mining engineers and associates of the industry in drilling, banking, investment, legal and other commercial fields. Our key objective is to support the aspirations of smaller companies, entrepreneurs and prospectors. Our board has 48 directors and there are regional representatives of the PDA in every province and territory except P.E.I. There are also other prospecting and exploration associations affiliated with the PDA across the country.

The PDA has been very much involved in making submissions on the new Mining Act in Ontario, the designation of park areas in both Manitoba and Ontario, on exploration matters to the Macdonald Commission, and to anyone whom we feel can make an impact on legislation that will affect our members. We work with the various mining associations including the Mining Association of Canada, and we support through scholarships those educational institutions that organize courses aligned with our area of interest, such as the Haileybury School of Mines. Whereas the Mining Association of Canada represents larger producers across Canada, the Prospectors and Developers Association is a national organization representing those who are mine finders.

Junior Mining Company

I would also like to deal with that mystical entity called 'the junior mining company'. Normally a junior mining company has no mine, although some are producing small tonnages. The operations side of a junior mining company is usually a few drills at some remote location. One significant feature that distinguishes a junior mining company from a major

company is the former's lack of revenue against which to deduct costs in order to take advantage of tax incentives a fact that gives a decided advantage to the major company. A goal of every junior mining company is to cease being a junior mining company and to become a senior mining company. The problem of sheltering income is much more enjoyable than trying to create it.

Flow Through Shares

Having dealt with the preliminaries, let us discuss some of the tax incentives that would benefit junior mining companies and prospectors. First, I wish to deal with flow-through shares. I refer specifically to flow-through shares relating to qualifying exploration expenditures and depletion earned thereon. These shares enable an individual investor to write off 133 1/3 percent of the amount of qualifying expenditures against his personal income for federal income tax purposes.

These qualifying expenditures are defined in the Income Tax Act as Canadian exploration expenditures (CEE). Their inclusions are fairly broad; in fact, broad enough to include the cost of sinking an exploration shaft (as opposed to mine or development shafts); a sampling mill on site, provided it does not process ore in commercial quantities; and, obviously, drilling, sampling, and line cutting expenditures.

The success of this incentive in helping mining companies to tap into investor funds has been somewhat remarkable. The Quebec government has gone even further, permitting, for Quebec income tax purposes, a deduction of 166 2/3 percent of qualifying expenditures in the province of Quebec. Depending on an individual's tax rate, the risk of investing in this highly speculative business is substantially reduced, and there is strong encouragement for individuals to invest in greenfield projects. The Quebec incentives have been very attractive and there is a tremendous amount of activity in northern Quebec utilizing this tax inventive. It has been estimated that exploration funds raised in the past three years in Quebec have exceeded $200 million.

Canamax has had a very successful flow-through share issue. Their goal of $29 million was exceeded by subscriptions of $33 million. The success of that issue enabled them to provide jobs for 35 employees directly, plus 70 indirectly, to explore and develop potential mineral deposits and to create wealth in Canada. A portion of the funds is being used to sink an exploration shaft at Bell Creek near

Timmins and, hopefully, to bring that gold deposit into production. One and one half million dollars was spent to prove up what turned out to be a world class potash deposit in Manitoba. Neither of these would now be potential mines, but for the flow-through shares issue.

My own company, Inco, after discovering fairly attractive gold mineralization in the Casa Berardi area of northern Quebec, looked for a partner, - one with money - to pick up a sizeable interest. Surprisingly, the most attractive partner was a Vancouver junior company called Golden Knight. Golden Knight issued flow-through shares, quickly raised the required capital, and with continuing drill successes we have never looked back.

There are however, some technical problems with flow-through shares. They are a tax shelter for Canadian taxpayers and as such are in demand near the end of a fiscal year. For a company to successfully market flow-through shares and put in the hands of the investor a deduction for his 1984 tax return, the money must be raised and spent by December 31.

The Northern Miner a few weeks ago discussed the Hughes-Lang partnership working full-tilt in Quebec. Let me quote it in part. 'A partnership of four Hughes-Lang companies has mobilized 12 diamond drill rigs on four separate gold properties in northwestern Quebec as it tries to spend more than $8 million on warranted exploration work before the end of the year. The money was raised, and is still coming in, through a flow-through offering with funds to be spent on properties held by each of the companies participating in the Hughes-Lang Partnership (1984). A tax deduction of up to 166 percent is available to investors who purchase the flow-through shares. In order to gain the deductions, however, the funds must be spent on exploration before the end of the year. Spending money quickly and under pressure is not an effective way to use tax-sheltered funds. A company should be able to implement an exploration program without regard for the calendar year. If that course were chosen, however, the shareholder/investor might not be able to get his tax deduction or his shares until the following year.

The Prospectors and Developers Association has made representations to several Ministers and to officials of Energy, Mines and Resources and the Finance Department asking them to correct this deficiency in the present legislation. We proposed that the custodian would issue shares and the required tax information slip to the investor immediately on receipt of the investor's funds. The custodian would reimburse the exploration company for the qualifying expenditures submitted until the fund is depleted. If it is

not depleted within twelve months, then the unspent funds would be subject to tax by the federal government, which would, in effect, recapture any unused tax incentives that were granted to the investor in the first year. At present, the exploration company is spending the money on behalf of the investor, i.e. acting as an agent. Under the PDA proposals the exploration company would be incurring the expenditures on its own account.

Expansion of Qualifying Assets for Flow-Through Shares

As I have already mentioned, the success of flow through shares for qualifying exploration expenditures and earned depletion has been a remarkable story. The shares are an extremely effective mechanism for raising funds, especially in a rising stock market. The Prospectors and Developers feel that the next logical step must be implemented: i.e., that new mine asset and development expenditures (CDE) plus earned depletion and investment tax credits, which large companies have in the past been able to utilize as incurred, should also be flowed through to investors. Expanding the flow-through concept to include development and new mine assets would have three benefits.

1. It would allow a junior mining company to raise capital and develop a mine without resorting to a large mining company for financial support.

2. It would place the juniors on a very similar tax basis to that of large companies. In a paper delivered to a CRS seminar in September 1979, David Scrim of EMR stated 'That although I hold the view that the ongoing mining industry is now generously viewed, under the federal income tax system I recognize that the junior mining exploration industry suffers in comparison'. He went on to point out that 'the juniors have no income against which to deduct their expenditures whereas mining companies at least in the recent past had the ability to deduct from other income the cost of developing new mines'.

3. The third point, and a very strong political one, is that, by providing for the deduction of costs for new mine development through the individual income tax system, Canadians will be the owners of the new mine developments in Canada. This seems to provide a positive counterbalance to FIRA concerns about foreign ownership.

Income Bonds

The next incentive that the PDA favours is the return of the income bond. The income bond, as most of you know, was a vehicle used to finance projects, corporate restructures etc., at effectively one half the going interest rate. This is possible because the payer of the interest (i.e. the borrower of the funds) does not have any income against which to deduct interest expense; and, on the other side of the ledger, the borrower is willing to lend money at a substantially reduced rate, because the interest on the loan will be excluded from taxation. These bonds were successful in the past in the development of new mining projects. Unfortunately for mining, they were also used extensively in corporate restructuring that did not give rise to new investments, and, prior to the change in legislation, abuse of the measure was rampant. Petro-Canada raised, just before the November 1978 budget that revoked the provision, some $1 billion through income bonds.

The Mining Association, as well as the PDA, have argued for the re-establishment of this vehicle, limiting it to the financing of new productive investments; specifically, class 28 assets (new mine assets). Obviously, there is a need for policing and the PDA has made recommendations along these lines as well.

The Prospector

The last incentive to be addressed deals with the prospector as an individual. As you know, before tax reform, a prospector or grubstaker received, tax free, the proceeds of the disposition of mineral property. As a result, a few Bay Street promotors pretending to be prospectors sold stock on the street and raised large sums of money for themselves and/or then companies - all free of tax. The Government won the ensuing court cases, but nevertheless, under tax reform, that whole provision was deleted. The prospector is now subject to full taxation if he receives his proceeds in cash; or to capital gains treatment if he receives his proceeds in shares (taxable at a nil cost base on disposition of the shares; there is some control over the payment of tax through the timing of the sale of shares.)

The PDA has proposed that capital gains treatment be afforded to a prospector on disposition of a mineral property, whether he receives shares or cash. It is very difficult to estimate the effect of this proposal in financial terms. However, it has been admitted by Finance that there would be very little revenue loss if this proposal were enacted.

Many deposits found by juniors and prospectors have contributed to the large mining companies that exist today, and the PDA feels it is important to provide greater incentive for exploration for new properties. When Norman Keevil addressed a CRS/PDA conference in September 1979, he pointed out that Placer Mining Company had discovered none of the mines that are the basis of that company, neither Craigmount, Endako, nor Gibraltar. More recently, the fantastic Hemlo finds were discovered by individual prospectors, not by mining companies. Admittedly, large mining companies are there now, but the real discoverers were John Larche, Don McKinnon, and Dave Bell - all self-employed.

Not to be totally bypassed, we majors have had a few successes as well. Inco, for example, found what is now the Lupin property of Echo Bay Mines in the Northwest Territories, the second largest gold producer in Canada. And I mentioned the Casa Berardi gold deposit in northern Quebec.

Mine Model Discussion

To measure the effect of the incentives that we were promoting, we undertook to have Bob Parsons of Price Waterhouse and Company do some modelling work. I wish now to run through the results of the mine models.

The Association attempted to obtain a typical mine model that would accurately depict the approximate size of property that could be discovered and developed by a junior mining company. The one selected is an actual mine that was brought into production in 1984, with the assumptions shown in table 1. Table 2 shows the actual capital costs that were incurred in bringing the mine into production. Table 3 describes the internal rates of returns based on various tax assumptions which were applied to the model. You will note that on a stand-alone project basis, under present tax rules, the rate of return assuming full equity financing is 10.9 percent. This compares with the internal rate of return that a taxable mining company would earn if bringing the project into production of 22.8 percent. The Prospectors and Developers Association analysed various assumptions to determine what combination would eliminate much of the difference between these two rates of returns. Backup material has been submitted to Energy, Mines and Resources and the Department of Finance.

Table 1

MINE MODEL ASSUMPTIONS

Reserves	2,412,000 tons
Grade	.16 oz gold/ton
Milling Rate	800 t/p/d
Milling Recovery	95%
Debt Financing	12% interest were applicable
Mining Costs	$40 ton
Revenue Assumption - Gold	$500 per oz.

Table 2

MINE MODEL CAPITAL COSTS

Exploration Development	$26,000,000[a]
Mining Machinery	18,000,000
Mill	9,500,000

[a] Net of $6,000,000 preproduction revenue.

3-Year Tax Holiday

The first assumption that was tested was the provision of a three-year period of exempt income for new mines. In this case, three-year exempt mine income replaced Class 28 accelerated Capital Cost Allowance. Interest expense where applicable is capitalized. You will note that the rate of return rises from 10.9 percent to 12.9 percent, an increase of only 2 percentage points.

Full Flow Through

We attempted to depict what full flow-through would mean to the model. It is assumed that the shareholders are Ontario

Table 3

SUMMARY - INTERNAL RATES OF RETURN
(percent)

	Method of Financing		
Project Basis	Equity	1/3 Equity 2/3 Debt	Other
Present rules	10.9	6.6	
Three-year exempt income	12.9	7.6	
Flow through to investors (CEE/CDE/Class 28)			28.0
Income bonds/CEE flow-through			16.2
Earned depletion 2/3 CEE/CDE, Income bonds			20.7
Taxable mining company	22.8	19.1	

residents and in the 50-percent tax bracket. As you can see, the resulting 28 percent rate of return is very attractive, but it means flowing through all earned depletion and all investment tax credits on the exploration and development costs and on machinery and equipment costs. With respect to the latter, the investor would be permitted to write these off as Class 28 assets on a declining balance basis of 30 percent, the same as that applicable to taxable mining companies.

Income Bonds

The next step was to demonstrate the effect of re-enacting the income bond provision. In this case, exploration and development expenditures and applicable depletion were flowed through to the investor. The machinery and equipment was financed by 7 percent income bonds. Comparing the 7 percent rate to conventional 12 percent debt financing, only an additional 1.1 percentage point improvement was realized: from 15.1 percent to 16.2.

One of the obvious advantages of using income bonds to finance machinery and equipment would be to supplement the shares being issued for new mine development. There is a fear on the part of junior mining companies that, if all the funds required to bring a new mine into production are raised by issuing shares, loss of control of the company could result. Income bonds would compliment the issuance of flow-through shares for exploration and development, and would assist in maintaining control. In summary, while income bonds do not give a great improvement in the rate of return, they do provide a complimentary financing vehicle.

Two-thirds Earned Depletion Flow Through

The assumption that comes closest to the goal of giving a junior mining company a rate of return approximating that of a taxable mining company is an increase in the depletion bonus earned on exploration and development expenditures flowing through to investors, from one-third to two-thirds. This provision would parallel the existing Quebec two-thirds depletion on exploration expenditures. If income bonds were used in conjunction with the two-thirds depletion assumption, and if the shareholders are Ontario residents in the 50 percent tax bracket, then the rate of return is 20.7 percent, which compares well to the 22.8 percent that the taxable mining company would earn if it were able to use its write-offs immediately.

Recommendations

The Prospectors and Developers Association has forwarded all its supporting material and made recommendations to the Minister of State for Mines and the Minister of Finance to implement a two-thirds earned depletion bonus on exploration and development flow through shares, together with the return of income bonds applicable to Class 28 assets only. The effect of these proposals would go a long way to bridge the gap between the taxable positions of junior and taxable major mining companies.

MARGINAL EFFECTIVE TAX RATES IN THE CANADIAN MINING INDUSTRY

Robin Boadway and Jack Mintz

Introduction

This paper has three objectives. The first is to define the notion of a marginal effective tax rate and to distinguish it from the more commonly-used measure of tax effects, the average effective tax rate. The latter is useful for indicating the magnitude of the tax burden imposed on mining firms in the sense that it shows the relationship between total taxes paid and some measure of the ability to pay taxes, such as total profits. However, it can be misleading as an indicator of the extent to which the tax system actually influences the amount of investment activity undertaken by the mining industry. For that purpose, economists have defined the notion of marginal effective tax rates which roughly measure the extent to which the before-tax rate of return on the least profitable investment undertaken must exceed the after-tax rate of return to savers financing the investment. The marginal tax rate represents what economists usually refer to as the distortion which determines the extent to which the tax system influences the incentive to invest in the industry. A given size of the average effective tax rate could be compatible with a positive, negative, or zero value for the marginal effective tax rate. The next section discusses the notion of average and marginal effective tax rates.

The second purpose of the paper is to present some preliminary estimates of the marginal effective tax rates for the Canadian mining industry. Such tax rates will vary from province to province due to the widely differing provisions for taxing mining income through mining taxes and corporate taxes across provinces. In the third section, we discuss the provisions of the taxation of the mining industries in Ontario and Quebec, and in the subsequent section present some illustrative calculations.

Finally, we will indicate some implications for tax reform which the literature on effective tax rates suggests. An ideal tax system for taxing resource industries would be to have a tax system which taxes only the rents on the resources. In terms of effective tax rates, these taxes would have zero marginal effective tax rates and posi-

tive average effective tax rates. We argue that it would be relatively easy to implement such a system by replacing the existing set of taxes with a tax based on cash flow. This is discussed in the final section.

It should be emphasized that our concern is primarily with the structure of the tax system, not with the amount of taxes that should be extracted from the industry. The point is that, regardless of the amount of rents that should accrue to the public sector as opposed to the private section, the tax system which is used to extract those rents should be as non-distortionary as possible.

Marginal Versus Average Effective Tax Rates

The concept of an average effective tax rate is well established. It is, for example, what is reported in the Department of Energy, Mines and Resources discussion paper, Mineral Policy. It is calculated as the ratio of total taxes paid to total profits reported. The raw data for calculating such a measure are readily available and there are no conceptual problems involved in constructing it. The difficulty with such a summary measure is that it is of limited usefulness in showing the impact of the tax system on the industry. It measures only the magnitude of the tax burden on the industry without indicating the extent to which taxes influence the behaviour of firms. Thus, it is of little use in showing how the tax system distorts decision-making in the economy and alters the relative levels of activity in different sectors.

Economists are, of course, interested in the magnitude of these incentive effects and have devised ways of measuring the disincentive effects of the tax system. The most common way is by the use of the concept of the marginal effective tax rate. Perhaps the simplest way to illustrate the concept is diagrammatically using figure 1. This figure shows the market for savings and investment in the mining industry. The 'supply of savings' curve shows the amount of savings that would be forthcoming at various rates of return to savers. It slopes upwards, since the higher the rate of return, the more savings will be available for investing in the industry. The "demand for investment" curve (I) is slightly less straightforward. One way to interpret it is as showing, for a given rate of return, the total amount of investment that would have at least that rate of return. As the rate of return falls, some investment which was not profitable at the previous required rate of return now becomes profitable at the lower required rate

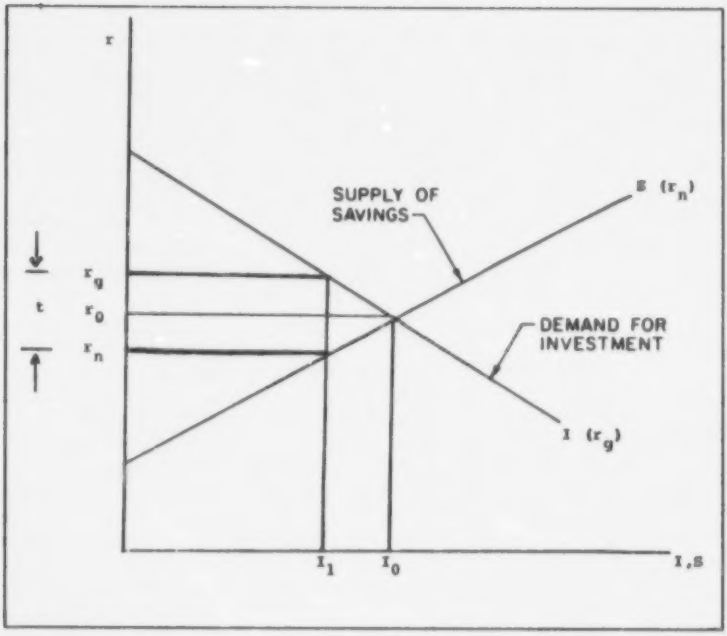

Figure 1. Savings Supply and Investment Demand in the Mining Industry

of return (that is, has a rate of return at least as great as the given required one). Thus, as the required rate of return rises so the curve slopes downwards.

In the absence of taxes, the market equilibrium would be at the quantity of investment and savings I_0 with the associated rate of return r_0. This implies that the rate of return to savers is r_0, and the rate of return on the marginal investment will also be r_0. Most investments will actually have a higher rate of return than r_0. This will be true of all those comprising the investment demand curve to the left of I_0. These are said to be infra-marginal projects.

Suppose now that a tax system is in place. Some of the returns to savers will be taxed to the extent that capital income is taxed under the personal income tax system. Similarly, some of the returns to investment will be taxed to the extent that corporate and mining taxes extract some of the returns to investment. Figure 1 depicts one possible

new market equilibrium that may result from the tax, that yielding a level of investment I_1. In this figure, the tax system is assumed to have imposed a positive distortion between the gross (before-tax) required rate of return on investment labelled r_o and the net (after-tax) rate of return to savers labelled r_n. The marginal effective tax is defined to be the difference between r_o and r_n, labelled t. The marginal effective tax reflects the extent to which the tax system has impinged upon the rate of return on the marginal project. As the diagram is drawn, the marginal tax is positive, indicating that the marginal investment is bearing some tax. As we shall see below, it is quite possible for the marginal distortion imposed by the tax system to be negative, in which case I_1, would lie to the right of I_o. The relevant point to be noticed is that it is the magnitude of the marginal distortion which is important for determining the impact of the tax system on total investment.

As mentioned, the tax distortion could be either positive or negative. In order to see why, it is useful to distinguish personal taxes from taxes on the firm. As long as the personal tax system taxes capital income (interest, dividends, capital gains), the distortion due to personal taxes will be positive. A tax on personal capital income will mean that the rate of return eventually received by savers is less than the rate of return that firms will have to pay the savers to obtain financing, which in turn is the return which must be covered by the marginal investment. Thus, the effect of personal taxes is unambiguous. However, taxes on the firm can have ambiguous effects on the marginal project. For example, the corporate tax is levied on revenue less some deductions for costs. For the marginal project in the absence of the tax, revenues would just cover the full economic costs of producing the revenues. When the tax system is imposed, if the tax system were to allow as deductions the full economic costs of producing the revenues to their present value equivalent, no taxes would be collected from the firm on marginal projects and the tax distortion arising from this sort of tax would be zero. Marginal projects would pay no tax, though inframarginal ones presumably would. If the value of deductions were to exceed the full economic costs of producing output, the tax would actually be acting as a subsidy at the margin.

The overall marginal effective tax is found by aggregating the marginal distortions created by tax. The net result could, in principle, either be positive, as in figure 1, or negative. For the latter to occur, a negative effect of the corporate tax would have to more than compensate for the positive effect of the personal tax. In reporting the

results, we could disaggregate the total effective tax rate into that due to personal taxes and that due to various types of taxes on the firm.

The measurement of effective taxes ultimately involves measuring the gross marginal rate of return to investment and the net rate of return to savings for various types of investment and for various types of mining firms (e.g. for exploration and development in gold mining in Ontario, or depreciable capital investment in copper mining in Quebec, etc.). The measurement of the net return to savings presents no difficulties in principle. A distinction needs to be made between savings in the form of debt and in the form of equity, but rate of return measures can readily be observed for either of these from bond market or stock market data. The relevant measure is the real after-tax return to savings in Canada.

The measurement of the gross rate of return on investment is rather more difficult, since one cannot observe the marginal project or its rate of return directly. It can only be measured indirectly. The procedure used is as follows. While we cannot measure the marginal rate of return directly, we know that, for the marginal investment, the gross rate of return on marginal investment must be just equal to the before-tax opportunity cost of financing and holding the additional investment. An expression can be derived for this opportunity cost, which involves tax variables, the cost of finance, and the rate of depreciation of the capital. It is this opportunity cost which is measured, and it is presumed that for the marginal investment the rate of return just equals the opportunity cost. The following section describes the relevant tax provisions and the subsequent one presents some illustrative calculations.

Current Tax Treatment of Mining Industries in Canada

It is an impossible task to present a short summary of current federal and provincial tax laws as applied to the mining industry. There is a bewildering variation in tax bases and rates even though corporate income and mining taxes levied by federal and provincial governments should ultimately tax resource rents. One finds the federal corporate income tax deviating in important ways from some provincial corporate income tax bases. This is especially true for provinces not party to the Tax Collection Agreements for the corporate tax. For example, Ontario does not allow the resource allowance to be deducted, uses a full rather than partial writeoff for the cost of acquiring mining property,

and awards an automatic depletion allowance (percentage of profit) rather than earned depletion allowance.

Even more bewildering is the substantial variation of provincial mining tax bases, both from corporate income tax bases and among provinces. For example, consider the tax treatment of buildings and machinery used in mining. The federal and provincial corporate income taxes allow for a 30 percent declining balance capital cost allowance. British Columbia under its mining tax does the same. Manitoba uses a different rate (20 percent). Some provinces, however, use straight-line depreciation: Quebec and Ontario (30 percent), Yukon and Northwest Territories (15 percent) and Newfoundland (10 percent). With such variation, a large number of accounts are needed to compute capital cost allowances for federal and provincial taxes.

The above example is only an illustration of the variation in the tax law as applied to mining. Considerable differences arise among federal and provincial taxes with respect to other provisions in the tax law. Table 1 presents a detailed list of deductions, allowances and rates used for only five tax bases: federal, Ontario and Quebec corporate taxes, and Ontario and Quebec mining taxes. For almost every category, the tax deduction, allowance or rate varies across these five tax bases. If there was ever a need for tax simplification, table 1 demonstrates it!

Due to space limitations, it is not possible for us to describe each tax base, so the reader is referred to table 1. What would be useful is to examine how various provisions in the tax law can affect the incentive to invest in various types of capital: land, buildings, machinery, exploration, development, and depletable and processing assets. As mentioned, a deduction is adequate if the present value of the write-off is equal to the full economic cost of holding the asset. When this occurs, the effective tax on income generated by the last dollar of investment in the asset is zero since all true costs of holding the asset are written off.

The current tax law rarely provides a correct deduction for capital costs. In some cases, the value of deductions is too generous and in other cases wholly inadequate. Each of the major components are discussed in turn.

1. Interest: Financial costs of holding capital are deductible only for corporate tax purposes, not for mining taxes. At times of constant prices, the deduction is inadequate since debt and not equity financing costs are deductible. With rising prices, however, the deductibility of interest payments unadjusted for inflation is too generous.

Table 1

COMPARISON OF TAX BASES - FEDERAL, ONTARIO AND QUEBEC CORPORATE INCOME TAXES AND ONTARIO AND QUEBEC MINING TAXES

Deductions	(1) Federal	(2) Ontario Corporate
Interest	Deductible	Deductible
Depreciation:		
- Building	30% (declining balance)	Same as (1)
- Equipment	30% (declining balance)	
- New Mines	30%-100% (declining balance)	
- Processing - After Prime Metal Stage	50% (straight line)	
Depletion	Earned depletion - $1 for every $3 of exploration, development, new mines, some processing asset expense - subject to 25% of profit limitation	Automatic - 1/3 deduction of profit
Development Expense	100% deduction	Same as (1)
Exploration Expense	100% deduction	Same as (1)
Cost of Mining Property	30% (declining balance)	100% deduction
Federal Investment Tax Credit	7% (general rate) - reduces depreciation base	Reduce depreciation base
Processing Allowance (% of Asset):	None	None
- Concentrating		
- Smelting		
- Refining		
Royalties and Other Mining Tax	Resource allowance of 25% of profit gross of exploration, development and interest expenses	None
Rate of Tax	36%	14%

(3) Quebec Corporate	(4) Ontario Mining	(5) Quebec Mining
Deductible	None	None
Same as (1)	30% (straightline)	30% (straightline)
	30% (straightline)	30% (straightline)
	Separate profit tax for new mines	
	15% (straightline)	30% (straightline)
Same as (1)	None	$1 for every $3 of exploration and new processing asset expense
Same as (1)	Same as (1)	Same as (1)
Same as (1)	Same as (1)	Same as (1)
100% deduction	None	None
Same as (2)	None	None
None	Subject to profit limitation; otherwise - 5% - 10% - 20% Northern Ontario - all processing assets - allowance of 25% except semi-fabrication (30%)	Subject to profit of limits; otherwise - 5% - 15% - 15%
Same as (1)	None	None
5 1/3%	Graduated 0-30%	Graduated 0-30%

Part of the interest paid to lenders maintains the purchasing power of debt's principal which is eroded by inflation. Allowing interest without adjusting for inflation to be deducted from corporate taxable income is tantamount to allowing part of the debt's principal to be deducted. The effect of the interest deductibility provision of the corporate tax is to create an incentive to hold debt, to speed up the rate of depletion and exploration and development.

2. Depreciation: The capital cost allowances (CCA) under the corporate and mining taxes rarely provide the true cost of depreciation. In times of no inflation, the CCA deductions are overly generous for most mining assets since the deduction is more than the value of physical wear and tear of the asset. This is especially true for buildings. In times of rising prices, however, the CCA deduction could be inadequate since it is based on the original rather than the replacement cost of capital goods. For some assets such as new mines, the CCA deduction based on the original cost of purchasing capital can still be too generous.

3. Depletion Allowances: The depletion allowance under the federal and most provincial corporate tax law is a misnomer. The earned depletion allowance, which is $1 for every $3 of exploration, development and some processing asset expenditures has no effect on the rate of depletion of the resource, nor does it represent the rate at which the resource is depleted. What the earned depletion allowance does do is provide an incentive for investments in qualified assets by allowing an additional deduction over and above the cost of holding the asset which already are deductible. On the other hand, the Ontario automatic depletion allowance based on the profit of the mining firm encourages depletion and reduces the incentive to hold depletable assets. The Ontario depletion allowance also affects the incentive to invest in all types of capital.

4. Exploration and Development Expenses: Most corporate and mining tax bases allow for a 100 percent write-off of exploration and development expenses. The only expenses that qualify for the deduction are those representing the use of current inputs, such as rented or leased capital and labour expenses, so that the write-off is correct in these cases. On the other hand, there are some generous incentives allowed for exploration and development under the corporate tax and under some provincial mining taxes. These include the earned depletion allowance as discussed above and the non-deductibility of exploration and develop-

ment expense from the resource allowance base under the corporate tax.

5. The Investment Tax Credits and Provincial Mining Processing Allowance: Investment tax credits, which are offered under the federal corporate tax and some provincial mining taxes, apply to depreciable assets and provide an incentive to invest in these form of assets. The credit, however, reduces the base used to calculate capital cost allowances. Most provincial mining taxes also provide a deduction for investments made in processing assets. The deduction varies for concentrating smelting and refining stages and could be enhanced or limited by the profitability of the firm. The allowances are intended to encourage processing in the province.

6. Resource Allowance: The resource allowance under the federal and most provincial corporate taxes was instituted after 1974 in lieu of deducting provincial royalties and mining taxes from the corporate tax base. Ontario and British Columbia deviate from the federal tax base; Ontario provides no deduction and British Columbia adjusts the corporate tax paid to reflect differences in the value of the resource allowance and the mining tax paid. The resource allowance base is calculated by deducting only capital cost allowances from revenues. Interest, earned depletion and exploration and development expenses are not deductible from the base. Because of this, the resource allowance affects the incentive to invest in different types of capital in different ways. Investments made in depreciable capital may be greater due to the resource allowance, although this depends on the generosity of capital cost allowance. The rate of depletion is unaffected by the resource allowance, and exploration and development can be encouraged by the allowance.

7. Tax Rates: Federal and provincial tax rates are the same as for other non-manufacturing firms. A few mining firms qualify for the small business deduction which reduces the federal and provincial tax rates by at least 21 percentage points. Provincial mining taxes are generally graduated, rising from 0 percent to a maximum rate (30 percent in Ontario) depending on mining income. Only British Columbia and Manitoba have a simple flat rate tax. Normally, one would expect that a higher tax rate would reduce the incentive to invest. For most capital goods, this would likely be true. However for some types of capital, tax write-offs may be so large that they swamp the pre-

sent value of taxable income generated by the capital investment. Thus a firm with a higher tax rate could invest more in capital in some instances because of the generosity of tax write-offs. Much of this depends on the ability of firms to write-off taxable losses generated by a particular form of investment against other forms of income. Clearly, the flowing-out of tax incentives of junior mining companies to equity owners illustrates this possibility. The deduction flowed out to the investor is more valuable the higher the investor's tax rate.

There are other provisions in the tax law that can affect the impact of the tax system on investment. These include carry-back and carry-forward provisions for taxable losses, profit limitations on the degree to which earned depletion and processing allowances can be claimed in a year, flow-through shares (as discussed above), and the cost of inventory deductions based on first-in-first-out accounting practices. Except for flow-through shares and the treatment of losses, these provisions tend to increase taxation compared to the case when no such provisions are in place.

Effective Tax Rates on Marginal Investment

We have emphasized the fact that federal and provincial tax levies may deter or encourage particular business activities depending on the generosity of various allowances. The distorting effect of the corporate and mining tax system on capital markets can be empirically determined by measuring the effective tax rate on the marginal investment. This rate is the ratio of the difference between the before-tax rate of return on marginal investment less the after-tax return to the before-tax rate of return. The effective tax rate, if positive, signifies that the tax system deters investment and, if negative, that it encourages investment.

Table 2 provides calculations of effective corporate and mining tax rates for tax-paying mining corporations in Ontario and Quebec for different types of capital expenditures (excluding inventories). These calculations are based on reasonable parameter values for tax-paying corporations. In many cases, the tax rates are negative, indicating that marginal investment is being subsidized rather than taxed. In these cases, a tax-paying firm would have to write off generous deductions against income generated by other assets in order to enjoy the 'subsidies' arising from the tax system.

Table 2 illustrates widely differing effective tax rates across assets and between the two provinces. In general, corporate income tax rates on marginal investments are negative for all assets except land. Processing assets are especially liberally treated under the corporate tax. Under the provincial mining tax, effective tax rates are positive except for processing assets when the allowance is not constrained by the limit equal to 65 percent of income. The mining tax deters other investments in land, building and machinery, since interest is not deductible from the tax base, as it is in the case of corporate tax.

The wide variation in effective tax rates across assets signifies substantial distortion induced by the tax system when investment decisions are made by mining firms. It is difficult to understand why the tax system should treat so differently investment in different forms. Rather than attempting to minimize costs, taking only factor prices into account, the mining firms will attempt to minimize taxes and to use techniques of production which are too capital-intensive.

Conclusions

The tax system is far too complicated in the way it treats mining income. Both corporate and mining tax bases have too many special deductions and rates for specific types of mining activities, be they processing, exploration, development or extraction. The tax system is not only complicated but highly ineffective in taxing rents. A tax on rents would not distort the investment decisions made by firms yet would still generate tax revenues by allowing for all true costs of production to be written off against income generated by assets. The current tax system imposes economic costs by distorting decisions made in the mining industry, by subsidizing some activities such as exploration and development, new mines and processing, and by taxing other forms of capital. In some cases, deductions are so generous that many corporations no longer pay any taxes, especially corporate taxes, on rents generated by their activities.

Is there a way in which a tax system can be devised which would:

- be simple;
- not distort investment decisions;
- generate tax revenue on all rents accruing to mining firms?

Table 2

EFFECTIVE CORPORATE AND MINING TAX RATES ON MARGINAL INVESTMENTS IN ONTARIO AND QUEBEC - 1984[1,2]
(percent)

	All Taxes		Corporate Tax		Mining Tax[3]	
	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec
Land	54.4	49.0	24.9	19.9	25.0	25.0
Depletable Assets	-18.0	-16.3	-18.0	-16.3	0.0	0.0
Exploration and Development	54.3	-74.2	-33.0	-35.2	0.0	-11.1
Buildings - New Mines[4]	-20.5	-25.4	-52.2	-53.5	15.4	15.4
- Other[5]	19.6	11.9	-10.2	-15.4	15.4	15.4
- Total[6]	7.6	0.8	-22.8	-26.8	15.4	15.4
Machinery - New Mines[4]	-20.7	-26.4	-57.1	-59.0	16.7	16.7
- Other[5]	18.8	13.5	-13.5	-16.0	16.7	16.7
- Total[6]	11.7	6.3	-21.4	-23.8	16.7	16.7
Processing - Profit Constrained[7]	-65.8	-74.1	-76.4	-83.4	5.4	5.4
- Concentrating[8]	-485.3	-150.9	-76.4	-83.4	-8.2	-8.2
- Smelting[8]	-	-	-76.4	-83.4	-54.4	-46.6
- Refining[8]	-	-	-76.4	-83.4	-196.7	-46.6
Weighted Average[9]	-10.7	-22.8	-23.7	-27.0	+11.9	7.5

Footnotes

1. The effective tax rate is $t = (r_g - r_n)/r_g$ where r = cost of capital gross of tax, r_n = cost of capital net of taxes. Some data are based on 1979-81 data averaged for the years.

2. Assumes firms are tax paying and deductions except for processing allowances and class 28 CCA deductions are unlimited by income.

3. Assumes marginal mining tax of 25% for both Quebec and Ontario.

4. Assumes CCA rate for new mines is 50%.

5. Assumes 49% of depreciable capital is in buildings and 51% in machinery and equipment for class 10 and 28 expenditures. (Statistics Canada, 61-007 and 61-216, Investment Statistics).

6. Assumes 30% of buildings and 18% of equipment qualify as new mines.

7. This estimate assumes that the process allowances for all three stages is more than 65% of mining income so that the 65% constraint binds. If this profit constraint is binding then effective tax rate calculations are affected for other capital goods but these calculations are not shown here. Assumes processing assets fall within Class 10 assets.

8. Assumes neither maximum nor minimum profit constraints on the processing allowance is binding. Hyphens indicate very large negative effective tax rates.

9. Weights used were 40% for exploration and development, 1% land, 31% buildings and 28% machinery.

In an article published by the Canadian Tax Foundation,[1] we have argued for a cash flow tax which has all these desirable properties. A cash flow tax would expense all investment expenditures (i.e. 100 percent write-offs) but not allow any deductions for interest, depletion and processing. We have shown that such a tax is equivalent to a tax on rents in the sense that the present value of rents is the same as the present value of cash flow. As we have argued earlier, such a tax would also not distort the investment and financial decisions made by businesses.

If all mining and corporate taxes were levied on the cash flow of mining firms, the tax system would be far simpler to understand and administer. It would treat all types of activities on the same basis -- the tax system would not impose any economic costs on the allocation of resources in the economy. An argument often expressed against the cash flow tax is that it would not generate enough revenue. However, this is unlikely true for the mining industry where write-offs are so substantial that many corporations are not tax-paying. A cash flow tax might generate more revenues than the current system.

---

1. R.W. Boadway, N. Bruce and J.M. Mintz, 'Corporate Taxation in Canada: Toward an Efficient System', in W.R. Thirsk and J. Whalley (eds.), Tax Policy Options in the 1980s, (Toronto: Canadian Tax Foundation, 1982), pp. 171-211.

DIGEST OF DISCUSSIONS

Margot Wojciechowski

Introduction

Why Taxes?

Participants considered why there are changes in tax regimes and ever-increasing pressures for revenues on the part of governments. They identified four principal causes:

- expenditure-driven pressures
- "bonanza"-driven pressures
- injustices or inequities between sectors, rather than "tax neutrality"
- industrial and economic development strategies

Obviously, it was noted, governments raise taxes to fund expenditures. Pressures come from politicians to pay for programs they wish to pursue. Particularly in the areas of health and education, costs of these programs have risen sharply in the past few decades. In Ontario, for example, budgetary expenditures on health in current dollar figures increased from $990 million in 1971/72 to over $8 billion in 1984/85, a major factor in the total expenditure increase, again in current dollars, from $3.2 billion to over $16 billion over the same period. The inability of governments to control expenditures, even in the face of economic decline, has driven taxes up as well, although rising deficits indicate that tax revenues have increased at a somewhat lower rate than expenditures. Attempts to balance budgets and reduce government debt levels may reverse this relationship in the future, driving taxes up even further.

The second pressure identified, bonanzas, has been most noticeable in the oil and gas business. Governments have been anxious to share in soaring profits from resources. One government participant stated that no political party could guarantee an unlimited bonanza to a private-sector resource developer, particularly from a state-owned resource, and so special taxes on windfall resource profits are inevitable. Others argued that governments get significant benefits from such windfalls under the basic tax structure, in the form of increased corporate taxes, divi-

dend taxes, personal income taxes, sales taxes etc., and that special taxes or graduated taxes are unnecessary. One participant expressed the view that an untaxed surplus left in the hands of the private sector would achieve higher social goals than if taxed and spent by governments, since it would be reinvested in wealth-creating activities rather than consumed. Underlying the rationale for the "bonanza" pressure, of course, is the concept of economic rent. Where governments are owners of the resources, they also have an obligation to recover "rents", or some part of the surplus of revenues over costs as compensation to society as a whole for the removal of the resources.

The third cause, which can be described as a pressure for tax neutrality, or equity, arises from inequalities and perceptions of injustices in the tax treatment of different sectors. These inequalities are seen as distorting economic decisions and resulting in economic inefficiences in the allocation of financial and physical resources. In this case, pressures lead to changes in relative tax levels among sectors.

The fourth cause of change in tax regimes is in some ways a reverse of the third: it is a deliberate deviation from the concept of tax neutrality, in order to facilitate government policies aimed at encouraging an industrial sector or a region at the expense of others, to achieve some economic, social, or political goal. It usually fits into the category of industrial strategy or regional development policy. Like the third, it may not increase overall tax revenues but will change relative levels among sectors. It was suggested that, since such policies may result in economic inefficiences overall, they should be applied carefully, and conservatively.

Why Is Mining Facing Increased Tax Burdens?

The four pressures on governments for increasing tax revenues and for changing existing tax regimes have all affected the mineral industry. Of particular interest to the participants in the course of the seminar discussions were the second, third, and fourth: bonanzas, neutrality, and industrial strategies. The first, total tax burden, may be of lesser interest at present simply because of the present low levels of taxable income.

Mining, because of its cyclical nature, the possibility of high rewards that accompany the high risks, and Crown ownership of much of the mineral rights, is one of the economic sectors particularly vulnerable to governments' inter-

est in sharing bonanzas. This presents a problem to the industry, some participants argued, because the bonanzas are few and far between, and are essential to provide investment incentives to keep the sector going in the more usual lean years and not infrequent years of loss. Sharing in the windfalls by government would be fair, it was suggested, only if governments also shared in the losses of other years. Other participants argued that governments do share the risks and the hard times, through assistance programs, incentives, and tax revenues foregone in preproduction and lean years (because of exploration and development writeoffs, depletion allowances, accelerated capital write-offs etc.) and that, whenever revenues are being realized, government should share on an equitable basis. For mining, governments' interest in taxing windfalls in good years has been accentuated by intergovernmental competition for resource revenues in the Canadian federal system, in which the provinces own most of the resources within their boundaries, and both they and the federal government have the right to tax the resulting revenues.

The third and fourth pressures on the tax regime were also of major interest in the course of the discussion, although, as will be seen below, the concepts of neutrality vs. industrial policy became quite confused, largely due to lack of agreement on the meaning of neutrality. Both concepts are closely tied to issues of special treatment of the mineral industry, through special incentives and special imposts that have evolved over many years in all jurisdictions. The resulting tangle of measures and changes has been the source of the industry's concern over the complexity and instability of the Canadian tax regime, and of concerns shared by industry and government over the equity and economic efficiency of taxation in the mineral sector.

In looking at the tax regime, participants considered first some of the strengths and the failings of the existing system, and second, improvements that would result in economic benefits to the mineral sector, the economy overall, and governments.

The Existing Tax Regime

Total Burden of Taxation

Industry participants argued that mining is one of the most heavily taxed sectors in Canada, if not the most heavily taxed. They pointed to standard taxes paid by all indus-

trial sectors, plus additional taxes specifically for mining, particularly provincial mining taxes and royalties. Other participants countered with statistical evidence that taxes actually paid by the sector were lower: for example, for the period 1973-81, federal and provincial taxes paid, as a percent of book income before taxes, averaged 24 percent for metal mining and 30 percent for manufacturing.

A number of causes of this apparent discrepency were cited: major among them were the low level of taxable income in the mining sector over the period, and the fiscal incentives offered specifically to mining, particularly capital investment incentives.

Declining taxable income and therefore falling collections of corporate taxes has resulted in increases in the imposition and levels of fixed[1] and volume[2] taxes by the provinces in recent years. Discussion of this phenomenon centred on British Columbia, and the evidence offered in the presentations by Philip Halkett and Tex Enemark. It was noted that these nonprofit taxes should be divided into two categories: cost of government services, and revenue collection. Much of the operating or volume-related taxes are in fact fees for services provided by government. Fixed taxes such as municipal taxes have been a particular burden to the many mines in the province that are closed and have no cash flow. It was noted that the B.C. government has taken steps to slow and in some cases reverse the rapid growth in some types of nonprofit taxation.[3]

It was argued that a great deal of work still needs to be done in applied studies of mining taxation, in order to evaluate the real tax burden of the industry and the implications for its economic viability. Participants were pleased to see the sort of modelling work that was described in the papers by Halkett, Albert, and O'Brien, and urged that it be carried farther.

---

1. e.g. corporation capital tax, property municipal tax.
2. e.g. sales tax, water tax, and payroll tax.
3. The 1985 B.C. budget proposed additional changes in this direction, including: phase-out of corporation capital tax and property tax on machinery and equipment over a 3-year period; freezing of the water rental fees, and reduction of fuel taxes for off-road purposes.

Among the suggestions for further investigation were:

- for the EMR models, compare actual cost and deposit characteristics for foreign and Canadian models - this would give a sort of "competitive bidding view" of where new development might be expected to occur;

- government models assume positive cash flow and taxable income - they should also consider firms not in that position, e.g. junior companies in the preproduction stage, or firms experiencing losses over a prolonged period, in spite of probable long-term viability.

A note of warning was repeated from time to time, pointing out that, while tax payments may be relatively insignificant for many mineral producers in the present economic situation, they may rise more than proportionately with economic recovery and increased profits in the industry. This trend will, in addition, be accentuated if governments respond to industry's preference for profit-sensitive, rather than fixed or volume-sensitive, taxes.

Complexity of Mining Taxation

Here again, there were wide differences in opinion, with some participants calling for major reform of the tax system and others recommending only minor revisions. The range of comments included:

> Basically, the Canadian tax regime is not bad. There are a few anomalies such as inefficiencies in marginal tax rates, and inequities in the treatment of juniors, but basically it just needs some fine tuning.

Or, in contrast:

> I am amazed at the kind words about the existing tax regime. Canada has the most ridiculous and counterproductive system anywhere. Some deposits that are economic before taxes are uneconomic after, and vice versa. When I explain the Canadian system outside Canada, I feel we are the laughingstock of the world.

The mining sector was identified by some researchers as having the most complex tax regime of any of the indus-

trial sectors that they had investigated. It was suggested that the Canadian federal system, with provincial ownership of resources, and provincial and federal taxing and regulatory powers, is largely the source of complexity. While there are many similarities among provincial regimes in tax treatment of the industry, there are also many areas of difference. In spite of efforts to standardize, for example through provincial mines ministers meetings, the differences seem to be growing rather than shrinking. Provincial decisions to collect their own corporate taxes were cited as a case in point. B.C. and Alberta are following the lead of Ontario and Quebec in that direction.

The problem of complexity is not merely academic. It adds to the cost of doing business for both industry and government, and produces inefficiencies and, inevitably if unintentionally, inequities.

Instability

Instability in the tax regimes for the Canadian mineral sector was introduced in the mid-1970s, following the commodity price boom and the investigations and report of the Carter Commission on taxation. While the resulting federal corporate tax changes were largely in place by 1976, provincial changes have continued and seem likely to continue for some time. In 1984, for example, changes in mineral taxation, in many cases major changes, were under consideration in the following provinces:

- British Columbia - major review of all forms of taxation in the province;

- Alberta - drafted new Crown royalty regulations for metallic minerals;

- Saskatchewan - amended write-off provisions in the Mineral Disposition Regulations 1961, introduced new freehold coal tax, introduced interim potash agreements and continued renegotiations, revised the Mineral Resources Act, and introduced the Crown Minerals Act;

- Ontario - a major review of taxation in the mining industry was in progress, as well as revision of the Mining Act;

- Quebec - preparing a white paper on personal income tax, and proposed major changes to the Mining Duties Act;

- New Brunswick - introduced major changes in the Metallic Minerals Tax Act, including a graduated tax on profits, deferred and later withdrew the proposed changes, and undertook a major review of the entire provincial tax system;

- Nova Scotia - established a task force on investment and taxation to review provincial and municipal taxation, amended the Mineral Resources Act with respect to capital depreciation, and enacted the Rio Algom Limited Municipal Taxation Act fixing an escalating schedule of municipal taxation for Rio Algom's new tin development.

Corporate and mining taxes were not the only ones identified as being in a continual process of change. Participants pointed to operating taxes such as B.C.'s water tax (which rose from $1.3 million in 1979 to about $18 million in 1982, with an additional 22.6 percent increase in 1984), and workers' compensation levies, which have increased sharply in recent years and face further increases such as that in Quebec, where the present rate of about $2,000 per year per employee could double under the proposed changes.

Instability in taxation policies creates serious difficulties, particularly for marginal orebodies, in two major areas. First, for ongoing mining operations, it may invalidate company projections concerning profitability and result in a lower-than-acceptable rate of return. It may even result in a shift from positive to negative cash flow, and hence to possible closures of otherwise-viable mines. Second, it introduces an additional element of risk in feasibility studies for new projects, which must be compensated for through higher rate-of-return requirements and therefore higher ore-grade requirements.

Another aspect of stability was considered by participants: overall policy stability. It was felt that the whole question of economic uncertainty should be considered in planning a tax regime, which might be used as a policy instrument to provide a buffer against other instabilities such as regulatory changes or market fluctuations.

Economic Inefficiencies

A number of the tax changes since the early 1970s have involved the provision of incentives to encourage capital investment. Participants pointed out that this kind of pre-

ferential treatment of capital investment in mining, while facilitating new mine development, can result in undesirable distortions and inefficiencies. For example:

- up-front incentives can bring marginal properties into production sooner than might otherwise be expected, and may even bring on sub-marginal projects;

- large-scale and low grade mines are favoured by the incentives, which can make uneconomic deposits marginally attractive; this may have encouraged or contributed to problems such as those in B.C., where many open-pit porphry mines have closed;

- small-scale mines, on the other hand, are discriminated against by the tax regime's incentives related to capital investment. As a result, marginal small-scale mines may be rendered uneconomic, thereby wasting a potentially valuable asset;

- large companies and large capital investments are favoured over smaller enterprises;

- the system discriminates against on-site exploration for extension of ore reserves and mine life; unlike grassroots exploration, it does not qualify as a tax-deductible exploration expense.

Other examples of economic inefficiencies cited were that the tax system is insensitive to low-profit years and to marginal enterprises, and tends to knock off the bottom quarter or so of the industry, and that exploration incentives tied to the calendar year encourage a rush of activities designed more to spend capital by year-end than to achieve an optimum exploration program.

Inequity in the Tax Regime

Discussions of inequities focused around two themes: the high level of risk faced by the mining sector compared to other sectors, and inability of junior mining firms to take advantage of fiscal incentives.

One of the aims of the tax reforms of the 1970s was to reduce special treatments of different sectors, and move toward neutrality in taxation. However, some participants argued that neutrality provisions which are equitable for businesses with relatively stable economic growth rates are

not suitable for mining, which has volatile cycles for the industry as a whole and high levels of risk for the individual investor and individual firm. The present regime, they suggested, skims off so much in taxes in good years that mining companies do not have the necessary reserves to finance lean years. Nor does it permit recovery of an acceptable rate of return over the long run. This can result in premature closures of ongoing operations and lack of incentive for new investment.

Other participants disputed this view. It was noted, for example, that high risk is not unique to mining, which in many ways resembles the electronics industry; among small businesses in general, only one in 300 survives over the long term, one participant reported.

It was also argued that investment decisions should depend on the inherent attractiveness of an investment, and should not be distorted by tax measures such as incentives given to compensate for risk. Furthermore, no matter what the investor's risk, if revenue results, it should be taxed, and such tax should be part of the investor's initial calculations.

Participants noted that windfall profits resulting from patents or from high technology breakthroughs do not receive special taxation attention the way resource bonanzas do. However, a number of reasons were suggested for the differences in approach. For example, unlike resources, patents and high tech are not state-owned assets, are not diminishing assets, and are not subsidized or protected by risk-sharing tax incentives. The latter two reasons were disputed.

Inequities related to junior mining companies were best illustrated in the PDA tax model, which indicated that the existing tax regime would provide a rate of return of 22.8 percent for an established producing company using full equity financing and able to utilize all its fiscal incentives, as compared to 10.9 percent for a junior with no income. It was noted that the introduction of flow-through shares, permitting investors to deduct exploration expenses from their income from any source, has gone a long way to resolving this problem. However, it also means that these deductions are no longer available to the company when production begins. Participants were unable to get an answer to questions concerning the before-tax rate of return for the project used as the basis for this model: i.e. is it basically economic, or not?

Another problem for juniors is the compulsory nature of deductions for exploration expenses, combined with a cut-off period for carry-forward of losses, which means

that some junior companies will not merely lose the "up-front" value of the exploration deductions, but they will lose them permanently.

Other inequities raised in the course of the discussion included:

- incentives are directed to primary investment, and so exploration deductions are not available for exploration activities designed to extend the reserves of producing mines, although the element of geological risk is high here as well;

- a "reasonable" rate of return is not sufficient for a mine operator; for that, he could work in security and in comfort. The "rent" or "excess profit" should be left to the operator, if it appears, to compensate for risks and difficulties and discomforts;

- in workers' compensation levies, employers are now paying for a broad range of social benefits as well as work-related benefits.

Exploration Incentives

Since mines are by their very nature depleting assets that must be replaced if mineral production levels are to be maintained, continuing exploration is essential for long-term survival and growth of the industry. Unfortunately, exploration does not in itself produce any direct revenue (except through disposal of property), and so is one of the first activities, along with research, to be dropped in times of economic difficulty. Participants discussed some of the incentives that various Canadian governments, federal and provincial, have introduced in order to encourage an increase in mineral exploration activities.

One federal approach that was introduced in the 1970s and dropped shortly after was the use of income bonds. Intended to stimulate investment in a wide range of new ventures, they were attractive to investors because the income generated was not taxed; they were attractive to borrowers, because the tax-free feature meant that lenders were prepared to provide capital at lower interest rates. Unfortunately, the income bonds were used extensively for reorganizations rather than new wealth-generating ventures, and so the incentive was withdrawn.

Participants also noted that, under existing rules, partnerships can be used to flow through benefits for ex-

ploration and development. This feature is frequently used in the oil and gas business, but several disadvantages were pointed out that have limited its application in mineral exploration. First, it was described as rather complicated, and more suited to oil and gas agreements than to the generally simpler approaches used by the mining industry. Second, the investor in such a partnership incurs a personal liability that he would not face with an investment in an incorporated company.

The most successful federal incentive discussed by participants is the recently introduced flow-through share, which allows investors to charge 133 1/3 percent of qualified mineral exploration expenses against their own incomes from any source. This was identified as having gone a long way towards overcoming the fiscal disadvantages faced by junior mining companies, which normally cannot take advantage of fiscal incentives until they generate a cash flow. However, as noted above, once the cash flow has been generated, any exploration deductions that have been flowed through to investors are no longer available to the company. In other words, the company exchanges a possible later benefit (cash flow and carry-forwards permitting) for the upfront benefit of lower capital costs. Governments make the reverse trade-offs: reduced tax revenues up front, and the potential for increased future revenues.

The Quebec government has carried the flow-through approach even further, allowing a deduction of 166 2/3 percent of qualified exploration expenses from investors' income. In Quebec, assuming that the incentive can be fully utilized by an investor in a high tax bracket, the after-tax cost of exploration is only 8 or 9 cents for each dollar of expenses.

It was pointed out, however, that even in Quebec with this and other assistance to exploration and a resulting high level of exploration expenditure, most activity has been concentrated on exploration of older gold properties, because rising gold prices have made lower cut-off grades more attractive. There has been relatively little in the way of new grassroots exploration.

A major drawback to both the federal and Quebec flow-through incentives was identified as the fact that the measure is tied to the calendar year. It would be more efficient, it was argued, to spend the exploration dollars raised in this way in a carefully planned program spread over a period determined by technical requirements, rather than being forced to spend all by December 31 so the expenses will qualify for the deduction. Also, participants wondered whether these measures might encourage uneconomic investment.

Designing Improvements

The previous section has described many of the reasons for discontent on the part of governments and the mineral sector with the existing tax regime. Participants also spent considerable time discussing the kinds of changes they would like to see brought about, in order to improve the overall regime of taxation facing the Canadian mineral industry. Since there was a wide range of opinion on the degree and nature of the problems with the existing system, there was also a wide range of views on the changes needed, from fine tuning with a minimum of disruption to a completely new approach.

One aspect of taxation that attracted a great deal of discussion and attention was the question of tax neutrality, and whether neutrality or economic and social policy goals should be the major force guiding the formation of tax policy. Although there were divergent views on both the meaning of neutrality and its importance as a principle, a typical Canadian compromise seemed to emerge from the discussions, where neutrality was seen to have a variety of meanings, and no single principle has absolute sway in determining policy directions.

Tax Neutrality

Participants offered a number of definitions of tax neutrality, including:

- a fiscal regime in which industry, after tax, resembles what it would be without tax, in terms of size, location, capital/labour ratios, growth rate, etc.;

- a fiscal regime which offsets or effects as little as possible the basic economic signals given off by decisions in savings, investment, and consumption;

- in an "ideal" model, assuming perfect competition, perfect markets, many sectors, full employment etc., it was suggested, a neutral taxation regime would eliminate the marginal firms in each sector;

- a fiscal regime which treats $1 earned in one sector exactly the same as $1 earned in another.

Basically, all these approaches fit into the "buck is a buck" concept of tax neutrality that was promoted by the Carter Commission. The other view, however, saw neutrality as a means of equalizing opportunities or advantages between sectors, or between regions, or between Canada and foreign competitors. It can be used to compensate for cycles, or for variations on the effect of cycles between sectors, or to compensate for subsidies, interest rate variations, currency fluctuations, etc. in international comparisons.

In pursuing this second definition, one participant stated that he agreed with the idea that a neutral tax system should not affect investment decisions, but disagreed that a flat rate on all sectors would be neutral. Incentives now offered for mining provide some compensation for unique features of the industry, such as its need for large amounts of up-front capital, its high levels of risk, and long lead-times.

A consensus of sorts appeared to settle on the first set of definitions, and there was some agreement that a tax regime approaching neutrality i.e. one that tends to treat all income in the same way, would be a reasonable goal, particularly if it also were tempered or modified to include a bias for investment over consumption. Neutrality might be particularly advantageous for mining, it was suggested, because, as a sector that is relatively small and has relatively little political clout (compared, for example, to energy, or agriculture, or manufacturing), it might be expected to come off badly in a process of bargaining with governments for incentives.

This leads us into the discussions of the reverse of neutrality, the concept of taxation as an instrument of public policy.

Taxation as an Instrument of Public Policy

There was considerable support for the view that, however attractive neutrality might appear in theory, as a goal of taxation policy, it could not be achieved in practice. Among the arguments in this vein were the following:

- tax policy is the strongest industrial development instrument governments have. They would be derelict in their duty if they did not apply it;

- the tax system should be used to create an environment in which new wealth-creating enterprises can flourish;

- Japan, in spite of high overall tax levels, has prospered extremely well by picking winners and losers and providing incentives, including tax incentives, to the perceived winners;

- capital is an increasingly scarce and limited resource, and tax incentives should be used to direct investment into activities that will optimize the resulting economic and social benefits.

Participants seemed to accept as given that tax regimes will continue to be used as policy instruments, and that pressures for increased levels of taxation will continue as well. With this in mind, they turned their attention to some specific details of possible improvements to the regime.

Simplicity

There were two approaches to the question of simplicity. One was the cash-flow tax system proposed by Boadway and Mintz. Among the advantages cited were:

- it uses a discounted cash-flow rather than an accounting basis, and gets rid of all sorts of arbitrary, variable, and artificial accounting procedures, allowances, and special treatment of various financial transactions;

- mining would be a particularly good place to start because it has the most complicated tax regime of any sector;

- taxes would be easier to estimate in advance (for example, for feasibility studies), thus reducing one of the risk elements;

- taxes would be simpler and cheaper to administer, for both industry and governments.

Other participants felt that the transition to a cash-flow system would be ineffective in simplifying the tax regime, and not worth the upheaval that would result, unless all jurisdictions made the transition. The prospects of this kind of unanimity were rated as extremely slim. However, it was agreed that looking at such systems is an extremely useful excercise in itself, even if they are never adopted wholesale, because it improves overall understanding of the tax regime and its impact on the economy, and

because it may contribute to more gradual improvements in the system.

Those arguing for less drastic simplifications to the tax system made a variety of suggestions, including:

- reverse the present trend away from federal administration of provincial corporate taxes;

- standardize provincial treatment of deduction and allowances in corporate income taxes (federal/provincial jousting was identified as a major source of the complications and "accounting junk" presently afflicting the tax system);

- clarify the rules and definitions for sales taxes, and work towards greater uniformity;

- provincial mines ministers should continue with efforts to reduce differences in provincial mines taxes and royalties.

Stability

Two themes emerged in the comments on stability: stability in the tax regime; and the tax regime as an instrument of stability in the face of economic change.

As has been noted above, the frequent and continuing changes in the tax structure facing the mineral industry have been a serious problem since the mid-1970s. It was noted that banking and manufacturing have not faced significant changes in taxation over the last 40 or 50 years, while mining, with large up-front capital requirements and long lead-times continues to face significant and largely unpredictable change. It was in the area of stability that the prospect of wholesale introduction of the cash-flow or rate of return system of taxation received its strongest negative comments. Its introduction would represent a great upheaval in the tax regime, and it was questioned whether the advantages it might provide in terms of neutrality, equity, and simplicity would justify the effort and disruption that would accompany the transition.

One approach to stability in the tax regime that received considerable attention was the use of ad hoc negotiated agreements (or similiar approaches) to guarantee or at least improve the chances of tax stability on a project basis, if not for the industry as a whole. It was argued that as simple an approach as the assurance of an unchang-

ing tax regime over the lifetime of an individual project would go a long way towards improving investor confidence in the rate-of-return projections.

The more formal approach of negotiated agreements was seen to have both advantages and disadvantages. Among the advantages are, of course, stability. Although many of the existing third world agreements with multinationals have been renegotiated, the risk of change seems to be less than the risk of change through the normal course of legislative change or order-in-council. In many cases, companies have been able to negotiate clauses guaranteeing no new or discriminatory taxation for about 20 years without mutual consent. It was noted, however, that a host government's leverage for obtaining such consent increases directly with the amount of capital committed by the multinational. Among the disadvantages of negotiated agreements are inequities between projects or companies, geological and other uncertainties at the start of the project when the negotiations occur, and possibility of unilateral change by the host government.

The use of tax auctions to establish project-specific tax regimes was also discussed. In New Brunswick, for example, B.P. agreed to pay the basic royalty on profits below 15 percent rate of return, as well as a 21-percent tax on profits over 15 percent. This gives the province several advantages: the best deal it could get from industry; and a share in any windfall that might result. The company and its investors on the other hand get a stable tax regime they believe they can live with, an acceptable rate of return, and the major share of any resulting windfall. It was noted, however, that tendering and bidding in this manner is not often possible, simply because of the way mineral properties tend to be developed.

If fine-tuning of existing legislation rather than major tax reform is taken as the road to improvement, participants recommended several measures that will contribute to stability while following this course. The most important was consultation:

- between governments and industry, so changes are mutually acceptable in the first iteration, and do not require endless adjusting;

- between industry and opposition parties, for educational purposes, and in order to avoid surprises in the event of changes of government;

- between governments, to standardize as far as possible and to avoid destabilizing competition over resource revenues.

A second requirement is research: much applied research is needed on the subject of the impact of taxation on companies, investors, allocation of resources, comparative advantage, international competitive position, net social benefits etc., to provide a systematic approach to tax reform, one that does not lead to unanticipated effects and to further revisions.

The second aspect of stability invoked by the participants was the use of the tax regime as an instrument of stability. Stability, it was suggested, does not require a tax regime that is fixed and rigid, but rather one that is flexible, one that responds in a constructive and predictable way to some kinds of economic change. The New Brunswick example noted above was described as a specific example of such a regime: although stable, it has a built-in flexibility that protects the company on the downside and the government on the upside.

A more broadly-based or industry-wide cash-flow or rate-of-return system was also seen as providing this sort of stability to the investor, through a flexible response that guarantees a fixed level of taxation up to an acceptable rate of return and then shares higher rates of return at some predictable rate.

Participants also called on governments to look beyond the tax regime when considering the industry's call for stability, and consider as well the non-tax areas in which governments introduce instability into company operations; for example:

- environmental regulation
- health and safety regulation
- parks and land withdrawal
- native rights
- interest rates, exchange rates, inflation
- trade policies
- export controls
- industrial strategy, procurement policies

Changes in these areas, as well as supply and demand changes beyond the influence of governments, should be among the variables considered in evaluating the use of tax regimes as an instrument of stability.

Equity

As noted in the discussions on the existing regime, participants felt that the tax regime should help to compensate for a number of special characteristics of the industry, in order to give it an equal chance in the competition for investment funds. These characteristics included:

- the long-lead times and capital intensity of the industry;
- the cyclicity of the industry, compared, for example, to manufacturing which tends to follow more gradual and generally upward trends;
- risk (although risk is not unique to mining, mining does face an unusually wide range of potential risks, particularly geological and market);
- the long period of negative cash flow for juniors developing new properties;
- fixed location of deposits, and resulting infrastructure requirements in remote locations;
- Canadian producers are price takers in very volatile markets;
- mines have a finite life;
- the Crown in most cases owns the resources and sets conditions for their development.

In all cases, there was some question as to whether or not the tax system is the correct instrument to address these problems. However, a wide variety of divergent and often contradictory recommendations was made by participants for tax measures to deal with these characteristics, including the following.

1. Problems of Juniors

- Extend the flow-through provisions to mine development expenditures. Government revenues foregone in the short-term will be recovered in the long run, some participants felt, once revenues are generated. There will also be benefits to governments from increased employment and economic activity.

- Remove the calendar-year restriction from flow-through provisions, so expenditures can be made more efficiently.

- Where expenses are not flowed through to investors, permit companies to carry eligible expenses forward indefinitely.

2. Cyclicity and Risks

- Make the tax system sensitive to rate of return. For example, the cash-flow system includes the concept of refundability, an important feature that helps to smooth out peaks and troughs. The question was raised of how to deal with long-term downtrends, in which government revenues could be seriously eroded. Mintz and Broadway argued that this would not be a serious problem. While adoption of a cash-flow tax system would lead to some problems in the transition period, they agreed, in the long term, the cash-flow problems of the firms would become the cash-flow problems of governments. In the transition period, increased deficits might result but would be legitimate because a future asset would exist. In effect, they noted, the system would make governments partners with respect to cash flow and risk, but not in management.

- Eliminate progressive taxation. It skims off revenues in the good years and leaves no reserves for reinvestment or for survival in the lean years.

- Eliminate loss carry-forward and carry-back.

- Make non-profit taxes sensitive to the down phase of cycles, through deferral or other flexible approaches. (Cash-flow tax would help here, through the refundability aspect).

- One participant suggested that equity requires no more than a "reasonable" rate of return for mining investments, even in the face of a windfall. This view was contested, however, by participants who argued that:
  - "reasonable" returns are already available from more secure investments;
  - "reasonable" returns after taxation are fair for a cyclical industry only if a refundability aspect helps to make up for the years of losses.

3. Capital intensity

- Review options for after-tax financing of new productive ventures, such as income bonds. Controls would be necessary to avoid some of the problems that arose with income bonds when they were introduced and then withdrawn a few years ago, when they were used, for example, to reduce the taxable income of major banks to very low levels.

- Participants were not in favour of government grants for financing new developments, pointing out that grants sometimes require excessively complicated procedures, and may introduce government controls or requirements to the investment decision process.

4. Remote locations

- Provide greater tax relief for capital expenditures on infrastructure and transportation facilities.

- Participants did not come to any agreement on whether or not the tax system is the correct instrument for subsidization of northern development.

Mining Taxation as an Instrument of Policy

There was no general agreement on the suitability of the corporate income tax system as the correct instrument to deal with fundamental problems such as sectoral and locational inequities, or cyclical and other instabilities affecting the competitive position of the Canadian mineral industry. However, there was agreement that governments will continue to use the tax system as a instrument of policy, and that therefore a number of caveats should be kept in mind, in order to optimize policy advantages in the industry and minimize disadvantages and negative impact.

First, it was noted, policies should distinguish between wealth-creating and wealth-consuming paths for resource revenues, and try to promote the former in preference to the latter in determining where to tax, to increase taxes, to offer incentives, or to spend tax revenues.

Second, where up-front incentives are offered selectively, they should be structured to encourage investment in new wealth-creating ventures. However, they should also avoid bringing on marginal ventures that would

not have gone ahead under a neutral tax environment. It was suggested, for example, that a return to income bonds for real new investment would help, but that reorganization and takeover should not qualify for this instrument.

It was noted that there are incentives in a number of jurisdictions in Canada, in the form of both fiscal measures and more direct assistance, already in place for exploration and development aspects of the mineral industry. While the treatment of these two activities by governments was felt to be far from perfect, it was suggested by some participants that the stage of the industry most in need of attention, in terms of both study and development of supportive policies, is the long-term viability of ongoing mining projects. This phase of the industry offers the most cost-effective opportunities for application of fiscal policies, since the capital structures, infrastructure and workforce are already in place. In many instances, producers need only equitable treatment, it was suggested, or, at most, incremental assistance, in periods of temporary declines or structural readjustment.

Furthermore, the economic and social savings resulting from supportive policies to prolong the life of existing mines are extensive. Some participants argued that in fact the savings are so extensive that they more than compensate for the costs of such policies. Among the savings that should be considered are:

- more efficient use of Canada's mineral endowment, through more complete mining of already-known deposits;

- more efficient use of existing townsites, services and infrastructure, where closures can be postponed;

- more effective and more human treatment of the workforce through increased job security;

- avoidance of government assistance costs for closure, costs such as the assumption of municipal debts, unemployment insurance, welfare, and retraining and relocation of workers.

Conclusion

The wide-ranging and frequently conflicting opinions and recommendations emerging from this gathering of individuals with great familiarity with the mineral industry and its

taxes highlight a number of important needs, if the industry is to be taxed rationally and effectively, and if the tax regime is to offer protection to both the economic viability of the industry and the social returns which can be obtained from exploitation of Canada's nonrenewable resources. The needs include the following.

1. Further research and analysis into the impact of tax regimes, both existing and hypothetical, on the economic viability of the industry, on the value of Canada's mineral endowment, and on the returns to Canada from exploitation of its resources.

2. More intensive communication between industry, tax analysts in universities and financial institutions, and governments, in a non-adversarial setting, to facilitate data collection, research, analysis, and dissemination of findings, so that tax policies can developed on a firm basis of understanding of all their implications.

While tax policies will continue to reflect both political philosophies and economic exigencies, increased understanding of their implications for the industry is an essential step in the design of a tax regime that optimizes benefits to the country as a whole.

APPENDIX 1

TAXATION AND ECONOMIC DEVELOPMENT: BRITISH COLUMBIA'S MINERAL EXPLORATION INDUSTRY*

Adapted from a brief submitted by
The B.C. and Yukon Chamber of Mines
to the Minister of Finance, British Columbia, October 1984

Summary of Recommendations

Mineral exploration within the Province of British Columbia can be stimulated by:

- the provision of additional tax benefit by way of Canadian exploration expense flow-through share funding;
- mineral exploration incentives;
- repeal of the capital tax legislation;
- modification of Mineral Resource Tax Act.

Introduction

Statistics indicate that mineral exploration dollars (risk capital for mineral exploration) raised from residents of British Columbia are being spent outside of the province, as a result of more favourable tax considerations and incentive programs offered by other jurisdictions.

Mineral exploration is of vital economic importance to our province. Mining is B.C.'s second industry; producing mines are wasting assets and new orebodies must be discovered in order to maintain high levels of employment and tax revenues. New mines also promote development of new infrastructures and services within the province. The economic impact of the discovery of new mineral wealth that can be mined at a profit is of obvious benefit to the province and to Canada.

---

* This paper was not presented at the tax seminar, but is reproduced here because it touches on many of the major issues related to Canadian mineral taxation, and explains a number of the concepts and instruments with clarity and brevity. It is reproduced here with permission of the B.C. and Yukon Chamber of Mines.

Exploration Facts and Statistics

1. Full time employment within the B.C. exploration industry involves 5,000 resident technicians and engineers.

2. Junior exploration companies in Canada, and particularly in British Columbia, have made about 60 percent of new mine discoveries for about 40 percent of total exploration dollars spent. Junior exploration companies therefore provide the most efficient vehicle for successful discovery of new mines and must be encouraged to continue doing so.

3. Junior companies by definition have no positive cash flow. Exploration funds or risk capital are derived through sale of share capital. Generally speaking, their exploration budget is derived 15 percent from private investors, 65 percent through public underwritings, and 20 percent from major resource companies purchasing equity in mineral properties that are at a more advanced stage of exploration.

4. Total hardrock mineral exploration expenditures in British Columbia have declined since 1980.

   1980 - $81 million
   1981 - $113 million
   1982 - $54 million
   1983 - $65 million
   1984 - $71.2 million

   The increase in 1984 is due to the introduction of flow-through shares late in the year.

5. Most of British Columbia's junior exploration companies raise the majority of their exploration budget by way of sale of shares through the facilities of the Vancouver Stock Exchange.

6. In 1983, the VSE raised $204 million, of which total estimates indicate $134 million went to junior exploration companies. Of the latter amount, 23 percent or $31 million was expended on mineral exploration in B.C.; 26 percent or $35 million went elsewhere in Canada; and 51 percent or $67 million went to the United States. It is estimated that about 80 percent of this risk capital pool came from residents of the province. Later market support is derived from sources in Europe, United States and the rest of Canada.

Flow-Through Shares

We emphasize the importance of providing additional incentive through a risk-capital financing instrument which will result in retention of risk dollars within the province, and which in turn would stimulate exploration expenditures within British Columbia by residents of the province. A powerful risk capital financing instrument for mineral exploration is the use of Canadian exploration expense flow-through shares.

Since 1974 Canadian taxpayers have been allowed to deduct Canadian exploration expenses (CEE) incurred by them on mineral resource exploration programs. Included in the CEE may be expenses incurred by a taxpayer via 'flow-through share' arrangements.

Flow-through shares are shares acquired by a taxpayer pursuant to an agreement with a corporation whereby the taxpayer incurs Canadian exploration expenses on the corporation's property, solely as consideration for shares of the corporation.

The provisions contained in the federal Income Tax Act allowing Canadian exploration expenses and mining depletion to flow out of a company to be utilized by the subscribing shareholder of specified shares is perceived by us to be a positive incentive program for the B.C. mining industry. Unfortunately, from a tax perspective, some provincial jurisdictions have added incentives for mining exploration activities which make investing in those provinces on an after-tax basis more economic than in British Columbia.

Quebec's Fiscal Incentives

Since early 1980 Quebec has provided an incentive in the nature of a special 33 1/3 percent tax deduction. While taxpayers in provinces other than Quebec may deduct up to 133 1/3 percent of qualifying mining expenses, Quebec individual taxpayers are allowed to deduct 166 2/3 percent of their qualifying mining expenses. This deduction can result in a Quebec investor having as little as 8.8 percent of his mining investment at risk before any disposition of the investment is made.

The key rules of Quebec's mining incentive program are:

- the incentive is a special 66 2/3 percent deduction from income as computed for Quebec tax purposes. The benefit is, therefore, directed to Quebec taxpayers;

- the deduction is only available to individuals;
- the deduction relates to certain qualifying mining expenses and is in lieu of a Quebec depletion allowance on these expenses;
- qualifying expenses are the cost of initial exploration work on a Quebec mineral property. Development (pre-commercial production) costs and interest expenses do not qualify;
- the Quebec mineral property does not have to be owned by a Quebec resident;
- under existing law, qualifying expenses must be incurred before 1986;
- the special 66 2/3 percent deduction, along with the basic 100 percent deduction, may be applied against all sources of income.
- the special deduction is available for indefinite carry forward, but cannot be used to create a loss in any year.

With reference to our earlier statistics, and using 1983 as an example, $134 million was raised for mineral exploration through the Vancouver Stock Exchange. We assume that 80 percent of this risk capital, or $107 million, came from residents of British Columbia. 26 percent or $28 million of the $134 million went to exploration activities in Ontario and Quebec. 51 percent or $54 million went to the United States. Only 23 percent or $25 million stayed in the province. It is interesting to note that, in Quebec in the same year, $40 million was raised publicly from residents of Quebec for CEE flow-through expenditures within their own province.

It is our belief that risk capital dollars, which are extremely difficult to locate in these tough economic times, are being directed out of British Columbia and to the provinces of Quebec and Ontario because of mineral discoveries being made as a result of incentive programs within these two provinces. We would encourage the British Columbia government to implement a program similar to that in Quebec, so that the 'at risk dollars' available here at home for British Columbia mining exploration would be competitive and stay within the province.

Quebec collects its own taxes, and we acknowledge that this fact simplifies the existence and maintenance of a 'Quebec Exploration Account' for individuals.

We find it difficult to accept the argument that this proposal is unworkable because of the time it would take to gain legislative approval. For B.C., a tax credit system would be required. The form of such a credit should include the following points:

- provision for carry-over if insufficient income in a particular year;
- available for offset against income earned in B.C. only;
- credit to a maximum of tax payable in B.C.;
- ordering provisions to set priorities on availability of other credits.

Ontario's Mineral Exploration Incentives

Since mid-1980, Ontario has been offering significant incentives for mineral exploration within that province. By utilizing the available Ontario incentives, investors' 'cash at risk' can be reduced to approximately 25¢ per dollar invested. The key rules for Ontario's Mineral Exploration Program (OMEP) Act are:

- before any exploration monies are spent, each year's exploration budget must be approved by the Ontario Minister of Natural Resources;
- those already engaged, by themselves or through affiliates, in mineral production in Ontario are ineligible. The definition of 'affiliates' is more restrictive than the federal associated company rule;
- the incentives available are:
  1. cash grants - for all except corporations
  2. tax credits - for corporations principally engaged in mineral exploration
  3. tax credits - for all other corporations (not convertible, but see below).

We mention the Ontario exploration grant program only as a reminder that its existence has attracted risk capital from British Columbia. We do not recommend such grant systems for implementation as incentives for exploration in British Columbia for the following reasons.

- CEE flow-through incentives are based on self-incurred productivity. Grants are conducive to waste and can be defined as government handouts.

- Administration costs both for government and industry can be excessive. Time and work loss factors are the norm during bureaucratic processing procedures.

- Grants from the government point of view are 100-percent dollars from tax revenue that are expended on

the basis of bureaucratic approval. CEE flow-through incentives encourage use of personal financial resources after a personal assessment of risk.

Capital Tax

It is our view that capital tax which is levied irrespective of the profitability of the corporate entity is a significant burden placed on junior mining companies in their formative years. We would recommend that this taxing statute be repealed.

If the present position of the government is that this statute is to be retained, we would recommend an amendment to the corporation tax act to provide a deduction for all exploration expenses from the paid up capital base irrelevant of their book treatment. In accordance with Section 12(1) (d) of the Corporation Capital Tax Act (the Act) 'a corporation solely engaged in exploration for a mineral resource' can deduct from its paid-up capital, 'that portion of amounts incurred for exploration purposes that have been charged to surplus and that have not been claimed as a deduction from income under the Income Tax Act'. Thus, a mining company can deduct from its paid-up capital the following:

Exploration costs written off for accounting purposes	XX	
Less: Exploration costs written off for tax purposes	XX	
Deduction from paid-up capital	XX	A

However, in accordance with Section 11(c) of the Act, there must be added to the paid-up capital 'all reserves, the excess of which is not allowed as a deduction from income' for tax purposes (and vice versa). Therefore we must add back to paid-up capital the following:

Reserves:	Deferred costs for accounting purposes (deferred mineral resources costs)	XX	
	Deferred costs for tax purposes (C.E.E., C.D.E., etc. pools)	XX	
		XX	B

As one can see, if we are solely dealing with mineral properties, we have a situation where: A (as long as A is greater than 0) will always offset B, and thus will cause no change to the paid-up capital calculation.

Mineral Resources Tax Act

Under this statute, income from each mine is computed and taxed separately, which precludes losses from one mine being offset against income from another mine. The mine by mine approach to mineral resource taxation should be abandoned to permit losses from one mine to reduce taxable profits from another. This would encourage continuity of operations where a mine is in a loss position and might reduce the number of premature and intermittent mine closures.

Other Considerations - Federal-Provincial Arrangements

It is our understanding the Province of British Columbia has given notice to the federal government of its intention to opt out of the Federal-Provincial Tax Collection Agreements. Although we feel that there are significant regional incentive programs which should be introduced and administered at the provincial level, it is our view that overall administrative cost to the tax paying public in complying with additional taxing statutes outweighs the benefits they gain. We would recommend that the provincial governments enter into negotiations with the federal administration to include the administration of some of these incentive programs under the federal and provincial tax collection agreements, rather than burdening both the province and the public with additional costs of compliance.

APPENDIX 2 SEMINAR PARTICIPANTS

Roberta Albert
Mineral Policy Sector
Energy, Mines and Resources Canada
Ottawa, Ontario

David L. Anderson
Executive Director
Centre for Resource Studies
Queen's University
Kingston, Ontario

Gilles Bergevin
Mineral Policy Sector
Energy, Mines and Resources Canada
Ottawa, Ontario

Robert Bevan
Director of Taxation
Falconbridge Limited
Toronto, Ontario

Tom Biggs
Dept. of Indian and Northern Affairs
Ottawa, Ontario

Robin Boadway
Department of Economics
Queen's University
Kingston, Ontario

Rae Booth-Horst
Policy Officer, Mineral Resources
Ontario Ministry of Natural Resources
Toronto, Ontario

Keith Brewer
Director General
Mineral Policy Sector
Energy, Mines and Resources Canada
Ottawa, Ontario

Wayne Carr
Mineral Resources Division
Department of Natural Resources
Fredericton, New Brunswick

Michael Daly
Economic Council of Canada
Ottawa, Ontario

Yvon Dionne
Economist - Mining Development Division
Department of Energy & Resources (Mining)
Government of Quebec
Quebec, Quebec

Albert Dorland
Business Finance Division
Statistics Canada
Tunney's Pasture, Ontario

Tex Enemark
President and CEO
Mining Association of British Columbia
Vancouver, B.C.

Philip G. Halkett
Director
Taxation & Intergovernmental Relations
Ministry of Finance
Victoria, B.C.

Doug Hume
Nuinsco Resources Limited
Toronto, Ontario

Byron Hynes
Manager
Department of Mines and Energy
St. John's, Newfoundland

Walter Kitts
Mineral Policy Sector
Energy, Mines and Resources Canada
Ottawa, Ontario

Gonzague Langlois
General Manager
L'Association des Mines de Metaux du Quebec
Quebec, Quebec

Brian W. Mackenzie
Senior Research Associate
Centre for Resource Studies
Queen's University
Kingston, Ontario

John Manson
Acting Assistant Director
Energy & Resource Policy Division
Department of Finance
Ottawa, Ontario

Mary Louise McAllister
Centre for Resource Studies
Queen's University
Kingston, Ontario

Jack Mintz
Department of Economics
Queen's University
Kingston, Ontario

Betty Morris
Kidd Creek Mines Limited
Toronto, Ontario

Tony Munday
Director, Canadian Taxes
Inco Limited
Toronto, Ontario

Keith O'Brien
Director, Government Affairs
Inco Limited
Toronto, Ontario

Nancy Olewiler
Department of Economics
Queen's University
Kingston, Ontario

Yearn Park
McGill University
Montreal, Quebec

Robert B. Parsons
Partner
Price Waterhouse
Toronto, Ontario

Douglas Patriquin
Assistant Deputy Minister - Energy
Saskatchewan Energy and Mines
Regina, Saskatchewan

Raymond Payne
Mineral Resources Division
Manitoba Energy and Mines
Winnipeg, Manitoba

Peter R. Richardson
School of Business
Queen's University
Kingston, Ontario

Roger Robitaille
Quebec Mining Duties
Energy & Resources Department
Quebec, Quebec

Keith Service
Manager, Taxation
Placer Development Limited
Vancouver, B.C.

Gregg Smyth
Senior Economist, Taxation Policy Branch
Ministry of Treasury and Economics
Toronto, Ontario

Raymond Sparkes
Director - Tax Policy
Fiscal Policy Branch
Department of Finance
St. John's, Newfoundland

Atam Uppal
Senior Economist
Ministry of Treasury and Economics
Toronto, Ontario

Maurice Vance
Mineral Policy Sector
Energy, Mines and Resources Canada
Ottawa, Ontario

Derek Williams
Chief, Tax Policy and Legislation
Department of Finance
Ottawa, Ontario

Margot J. Wojciechowski
Assistant Director
Centre for Resource Studies
Queen's University
Kingston, Ontario

Roy M. Woodbridge
Director, Mineral Economics
Mining Association of Canada
Ottawa, Ontario

David Yudelman
Senior Research Associate
Centre for Resource Studies
Queen's University
Kingston, Ontario

APPENDIX 3 PROGRAM OF THE SEMINAR

14TH CRS POLICY DISCUSSION SEMINAR
TAXATION POLICIES IN THE
CANADIAN MINERAL INDUSTRY

Monday, November 5, 1984

7:00 p.m. AN HISTORICAL PERSPECTIVE

A View of the Impact of Past Tax Changes on Canadian Mining
Gonzague Langlois, Quebec Metal Mining Association

Tuesday, November 6

9:00 a.m. TAXATION POLICY: AN OVERVIEW

Aspects of Federal Tax Policy
Derek Williams, Taxation Policy, Department of Finance, Ottawa

The Total Tax Burden of the Mining Industry
Tex Enemark, The Mining Association of British Columbia

Taxation and Economic Development in British Columbia
Philip Halkett, Dept. of Finance, Government of B.C.

1:30 p.m. THE IMPACT ON INTERNATIONAL COMPETITIVENESS

Provincial and International Tax Comparisons in the Mineral Industries
Roberta Albert, Tax Policy Analysis Division, Energy, Mines and Resources

3:00 p.m.	Discussion: Current Situation
7:00 p.m.	**An Industry View of Federal-Provincial Tax Issues** Keith Service, Placer Development, and chairman, MAC Tax Committee

Wednesday, November 7

9:00 a.m.	PROPOSALS FOR CHANGE
	Tax Incentives for Junior Mining Companies Keith O'Brien, Prospectors and Developers Association and Inco Limited
	Effective Taxation in the Canadian Mining Industry Robin Boadway and Jack Mintz, Department of Economics, Queen's University
1:00 p.m.	Discussion: Future Priorities
4:30 p.m.	Conclusions and Recommendations

THE AUTHORS

Roberta Albert graduated from Carleton University with the degree of Bachelor of Commerce in 1978. She articled with a national accounting firm and obtained the Chartered Accountant designation in 1980. She spent three years in the accounting firm's tax group in Ottawa. Since 1983 she has been working in the Tax Policy Division of Mineral Policy Sector, Energy Mines and Resources Canada.

Robin W. Boadway is Professor and Head, Department of Economics, at Queen's University. His university degrees comprise a B.Eng., Royal Military College, B.A. and B.Phil., Oxford, and a Ph.D. in economics, Queen's University. A Rhodes scholar, Dr. Boadway attained the rank of Major in the Canadian Armed Forces, and has taught at Royal Military College, the University of Chicago, and Queen's. He has authored over sixty papers and books, in areas including resource taxation, federal/provincial revenue sharing, corporate taxation, tax reform, and taxation of capital income.

Tex Enemark is President of the Mining Association of British Columbia, and has a longstanding interest in public policy issues. Following studies at UBC in Canadian government, law, and American history, he worked in Ottawa in a variety of positions, including Special Assistant to the Minister of Consumer and Corporate Affairs and Executive Assistant to the Minister of Urban Affairs. In the British Columbia government, he has served as Deputy Minister of Consumer and Corporate Affairs and Director of Deregulation. In the private sector, he has been western manager for MacLean Hunter and a consultant on coping with governments.

Philip Halkett is Director, Taxation and Interprovincial Relations Branch, in the B.C. Ministry of Finance. He has a B.A. and an M.A. in economics from the University of British Columbia, with specialization in resource economics and public finance. In 1973 he joined the Budget Bureau in Saskatchewan, and later worked on the design of the uranium royalty and the negotiated potash agreements in that province. In 1979 he moved to British Columbia, where he has worked with the Treasury Board and the Ministry of Finance.

L. Gonzague Langlois graduated in mining engineering from Laval University. He worked in a variety of mines in northwestern Quebec, starting as miner and progressing to mine manager at Sullivan Consolidated Gold Mines and later at Molybdenite Corporation. In 1963 he took over direction of the Quebec Metal Mining Association, and for the last 22 years has represented the Quebec industry's interests to government.

Jack M. Mintz has a B.A. in economics from the University of Alberta, an M.A. in economics from Queen's University, and a Ph.D. from the University of Essex. His employment experience includes research positions in the Alberta Budget Bureau, the Economic Council of Canada, and the federal Department of Finance, where in 1984 he served as special advisor on corporate tax research to the Assistant Deputy Minister. Dr. Mintz is an Associate Professor in the Department of Economics at Queen's University, with research interests in micro-economic theory, industrial organization, uncertainty, and public finance - optional taxation, capital income taxation, and public enterprise.

E. Keith O'Brien is Director of Public Affairs for Inco Limited. Mr. O'Brien is a chartered accountant with a long-standing interest in issues related to mining taxation. At the federal level he worked for the Department of National Revenue, with responsibilities for tax assessments of a number of mining companies. He joined Inco's Tax Department in the early 1970s, and has served as Director of Taxation and Director of Government Affairs. He has also been chairman of the Tax Committee of The Mining Association of Canada and is a member of the Tax Committee of the Prospectors and Developers Association.

Keith Service is Director of Taxation for Placer Development Limited. A chartered accountant, he spent a number of years with Price Waterhouse before joining Placer in 1974. He has served as chairman of the Tax Committee of the Mining Association of British Columbia and of The Mining Association of Canada, and as president of the Vancouver Chapter of Tax Executives Institute. Mr. Service is co-author of Mining Taxation in B.C., a course for the B.C. Institute of Chartered Accountants.

Derek Williams is Chief, Tax Policy and Legislation, in the Tax Policy Branch in the federal Department of Finance, with responsibility for developing tax policies related to mining and oil and gas, and preparation of related legislation. He is a chartered accountant, and first joined the federal government as a tax assessor in the Department of National Revenue. In 1968 he joined the Tax Policy Branch of Finance, and participated in preparation of the White Paper on Tax Reform and the subsequent tax reform legislation. Since the early 1970s, Mr. Williams has had the prime responsibility for preparing resource taxation legislation.

THE CENTRE FOR RESOURCE STUDIES

The Centre for Resource Studies (CRS) was established in 1973, under the sponsorship of Queen's University, the federal Department of Energy, Mines and Resources, and The Mining Association of Canada, to carry out a program of research and publication on mineral policy issues.

The Centre provides opportunities for multidisciplinary research in resource studies at Canadian universities, furnishes reliable information on matters related to mineral resource policy, and promotes closer liaison between government, industry and other concerned groups. The research program is carried out both at the Centre and by means of contracts with qualified investigators, usually at Canadian universities. Small exploratory studies are also funded, through a system of grants-inaid of research. CRS Seminars involve representatives from governments, industry, universities, labour, and other interested groups in working sessions on issues of current concern. Through this program of research and seminars, and the resulting publications, the Centre contributes to informed discussions and a better understanding of significant issues.

The Centre is governed by a board of directors which establishes general policy and priorities for research. The board has sixteen members, appointed by Queen's University, The Mining Association of Canada, and the federal government. Guidance on the research program, together with discussion of policy issues and other matters, is provided by the Advisory Council. This body comprises all researchers associated with the Centre, together with members appointed from such groups as governments, industry, labour, and other interests. A Research Advisory Committee aids in the development of projects and the selection of research proposals. The executive director and staff are responsible for the work of the Centre within this framework.

Most of the funding for the Centre's activities is provided by two of the sponsors, EMR and MAC. In addition, the Centre accepts contracts from other organizations interested in mineral policy research.

The Centre welcomes comments on its publications, proposals for research projects or for publication, or enquiries about any aspect of its work. For further information, contact:

Centre for Resource Studies
Queen's University
Kingston, Ontario, Canada K7L 3N6
(613) 547-5957

CRS PUBLICATIONS

Monographs and Collections

Conflict and its Resolution in the Administration of Mineral Resources in Canada, by R.M. Burns; 62 pages, 11 tables. Published 1976.

The Impact of the Mining Industries on the Canadian Economy, by R.W. Boadway and J.M. Treddenick; 116 pages, 15 tables. Published 1977.

The Transportation Impact of the Canadian Mining Industry, by A.I. Wallace; 154 pages, 17 tables. Published 1977.

Human Resources in Canadian Mining: A Preliminary Analysis, by J.A. MacMillan, G.S. Gislason, and S. Lyon; 174 pages, 48 tables. Published 1977.

Health and Safety in the Canadian Mining Industry, by G.W. Gibbs and P. Pintus; 248 pages, 58 tables. Published 1978.

The Canadian Nonferrous Metals Industry: An Industrial Organization Study, by E. Urquhart; 156 pages, 18 tables. Published 1978.

Economic Impacts and Linkages of the Canadian Mining Industry, by P.E. Nickel et al.; 140 pages, 31 tables. Published 1978.

Environmental Impact of Mining in Canada, by E.A. Ripley et al.; 274 pages, 45 tables. Published 1978, reprinted 1982.

Effects of Taxation on Base Metal Mining in Canada, by B.W. Mackenzie and M.L. Bilodeau; 188 pages, 29 tables. Published 1979.

Gold: The World Industry and Canadian Corporate Strategy, by E. Cousineau and P.R. Richardson; 192 pages, 32 tables. Published 1980.

The Impact of Policy Change on Decisions in the Mineral Industry: The Case of Exploration in Manitoba, 1969-77, by B.E. Owen and W.J. Kope; 116 pages, 8 tables. Published 1980.

The Role of Mineral Taxation in Industry/Government Conflict: The Case of the Saskatchewan Potash Reserve Tax, by David L. Anderson; 135 pages, 41 tables, 2 illustrations. Published 1981.

Profitability in the Canadian Mineral Industry, by Charles H. Pye; 178 pages, 42 tables, 12 illustrations. Published 1981.

Foreign Investment Control in the Canadian Mineral Sector: Lessons from the Australian Experience, by David L. Anderson; 180 pages, 22 tables. Published 1983.

Financing Canadian Mining in the Eighties: Strategies for Action, edited by David Yudelman; with papers by B. Bradley, A. Dorland, J. Erola, P. Gillin, P. Glenshaw, S. Greenwald, B. Kalymon, P. MacCulloch, B. Mackenzie, K. Murphy, A. Powis, R. Sultan, and D. Yudelman; 240 pages. Published 1984.

National Resources and International Bargaining Power: Canada's Mineral Policy Options, by Patrick J. Caragata; 204 pages, 23 tables. Published 1984.

Proceedings

No. 1 Rate-of-Return Taxation of Minerals, edited by N.D. Olewiler and P.R. Richardson, with papers by B.W. Mackenzie and M.L. Bilodeau, P.M.T. White, N.D. Olewiler, J.T. Cawley, and E.P. Gush; 109 pages. Published 1978.

No. 2 International Competition and the Canadian Mineral Industries, edited by C.H. Pye and M.J. Wojciechowski, with papers by H.C. Armstrong, H.T. Fargey, C.G. Miller, N.D. Olewiler and P.R. Richardson, D. Peristein, and K.C. Hendrick; 109 pages. Published 1978.

No. 3 Current Concerns in Mineral Policy, edited by B.W. Mackenzie and C.E. McMurray, with papers by C.R. Archibald, W.J. Barbour, D.B. Brooks, J.S. Dowsett, J.M. Fleming, and G.A. Jewett; 75 pages. Published 1978.

No. 4 Canada's Mineral Trade: Implications for the Balance of Payments and Economic Development, edited by M.J. Wojciechowski, with papers by B.W. Wilkinson, D.J. McCulla, J.G. MacKinnon, A.G. Balogh, and W.G. Chambers and J.S. Reid; 113 pages. Published 1978.

No. 5 Employee Relations Initiatives in Canadian Mining, edited by M.J. Wojciechowski, with papers by W.J. Bennett, F.R. Nogas and J.P. Fulcher, W.F. Clarke, S.B. Jones, T.F. Cawsey and P.R. Richardson, and P. Warrian; 85 pages. Published 1979.

No. 6 Junior Mining in Canada: The Problem of Investment and Securing Fair Returns, edited by M.J. Wojciechowski, with papers by A.J. Freyman, B.A. Kalymon, J.D. Mason, D.W. Scrim, E.H. Neave and P.R. Richardson, and E.G. Thompson; 101 pages. Published 1979.

No. 7 The Future for Junior Mining in Canada, edited by M.J. Wojciechowski, with papers by Hon. J.A.C. Auld, J.L.C. Lyndon, N.B. Keevil Jr., D.G.C. Menzel, H.T. Fargey, A.J. Freyman, Hon. R. Hnatyshyn, J.C. Baillie, D.W. Scrim, J.P. Bunting, E.H. Neave and P.R. Richardson, L.A. English, M. St-B Harrison, R.H. Grasley, and Hon. F. Drea; 125 pages. Published 1979.

No. 8 Mining-Linked Diversification of the Sudbury Basin Economy, edited by M.J. Wojciechowski, with papers by D.C. Frith, J.P. Reny, A.I. Wallace, J.H. Holtby and L.C. Kitchener, 53 pages. Published 1980.

No. 9 The Changing Structure of the Canadian Mineral Industry, edited by M.J. Wojciechowski, with papers by I.A. Stewart, R.F. Mikesell, R. Simeon, R. Keyes and J.M. MacLeod; 105 pages. Published 1980.

No. 10 Northern Mining in the 80s, edited by M.J. Wojciechowski, with papers by Hon. G. Braden, R.J. Cathro, D. MacKinnon, J. Smith, R.W. Stephenson, B.E. Novak, E.N. Doyle, J.R. Witty, J.E. Marshall, A.G. Gordon, J. McCormack, H.B. Hicks, J. Zigarlick, T. Shearcroft, W. Kupsch, J. Stabler, and Hon. J. Erola, 110 pages. Published 1980.

No. 11 Skilled Manpower Shortages in the 1980s: Towards a Cooperative Solution, edited by M.J. Wojciechowski, with papers by R.J. Gray, J.S. Reid, W.H. Digby, J.B. Hopkinson, A. Knoll, O. Tremblay, G. Betcherman, P.E. Womeraley, M.J. Alton, V.C. Allman, C. Stairs, E.J. Weiss, and W.E. McBride; 116 pages. Published 1981.

No. 12 Acid Rain Controls and the Economics of the Canadian Nonferrous Mineral Industry, edited by M.J. Wojciechowski, with papers by J. Gerin, W.G. Deeks, P.R. Clarke, J.B. Hyne, H.T. Fargey, B.W. Mackenzie, and E.J. Ward; 90 pages. Published 1982.

No. 13 Mineral Policy Formulation: The Role of Scientific and Technical Knowledge, edited by M.J. Wojciechowski, with papers by G.A. Jewett, H.D. Drechsler, P.G. Halkett, D.E. Bond, D.C. Findlay, W.G. Jeffery, L.G. Bonar, D.W. Davis, and J. Zwartendyk; 135 pages. Published 1982.

No. 14 Mining Communities: Hard Lessons for the Future, edited by M.J. Wojciechowski, with papers by I. Haugh, R.P. Douglas, R. MacDonald, D. Brown, R.D. Glass, J. Lazarovich, W. Mulvihill, D. DePape, G. Paget, B. Walisser, and R. Roberts; 211 pages. Published 1984.

No. 15 Native Participation in Mineral Development Activities, edited by M.J. Wojciechowski, with papers by A. Clark and M. Lalande, K.A. Graham, B.W. Mackenzie, C.D. Hunt, J.L. Blais, P.R. Joubin, and E. Laliberte; 105 pages. Published 1984.

No. 16 Mining Productivity, edited by M.J. Wojciechowski, with papers by P.R. Richardson, K. Stollery, H. Martin, B.W. Mackenzie, C.G. Miller, W. James, P. LePage, E. Kossatz and W. Curlook, and K. Whitham; 187 pages. Published 1985.

No. 17 Canadian Mining Taxation, edited by M.J. Wojciechowski, with papers by G. Langlois, D. Williams, T. Enemark, P. Halkett, R. Albert, K. Service, K. O'Brien, R. Boadway and J. Mintz; 146 pages. Published 1985.

Working Papers

No. 3 Provincial Mineral Policies: Newfoundland, 1949-75, by M.J. Prince, 67 pages, 7 tables. Published 1977.

No. 6 Provincial Mineral Policies: Saskatchewan, 1945-75, by R.C. Murray; 64 pages. Published 1978.

No. 8 Federal Mineral Policies: 1945-75, by M.J. Wojciechowski; 85 pages, 21 tables. Published 1979.

No. 9 Trends in Canada's Mineral Trade, by B.W. Wilkinson, 63 pages, 27 tables. Published 1978.

No. 10 Canada as a World Zinc Producer: Prospects to 1980, by N.D. Olewiler, P.R. Richardson, and L. Rumble, 22 pages, 12 tables. Published 1978.

No. 11 A Survey of Resources and a Production Cycle for the Nonferrous Metals, by C. Lafkas and J.G. Paterson, 34 pages, 9 tables. Published 1978.

No. 12 Solar Energy and the Canadian Mining Sector: A Demand Forecast, by J.S. Shewchun and D.B. Curtis; 45 pages, 14 tables. Published 1978.

No. 13 Cerro Colorado: A Case Study of the Role of Canadian Crown Corporations in Foreign Mineral Development, by C.G. Miller, N.D. Olewiler, and P.R. Richardson; 44 pages, 5 tables. Published 1979.

No. 14 The Administration of Mineral Exploration in the Yukon and Northwest Territories, by K.A. Graham, R.G. McEachern and C.G. Miller; 42 pages. Published 1979.

No. 15 Public Policy Aspects of Information Exchange in Canadian Mineral Exploration, by D.O. Downing and B.W. Mackenzie, 52 pages. Published 1979.

No. 16 Canada's Competitive Position in Copper and Zinc Markets, by B.W. Mackenzie; 41 pages, 21 tables. Published 1979.

No. 17 Constitutional Change and the Mineral Industry in Canada, by Wendy MacDonald; 66 pages. Published 1979.

No. 18 An Economic Analysis of the Canadian Taxation of an Integrated Mining Company, by Jean-Thomas Bernard; 112 pages. Published 1980.

No. 19 Looking for the Improbable Needle in a Haystack: The Economics of Base Metal Exploration in Canada, by B.W. Mackenzie, 48 pages. Published 1980.

No. 20 The Market Price of Risk in the Canadian Mining Industry, by H.F. Campbell, 29 pages. Published 1980.

No. 21 Public Affairs and the Minerals Industry: Junior Mining; Northern Development; Loans for Foreign Mines; A Public Relations Strategy, by C.G. Miller; 42 pages. Published 1980.

No. 22 Newfoundland Mining Industry: Present Status and Potential for Expansion, by N.D. Olewiler and C.H. Pye; 208 pages, 83 tables. Published 1980.

No. 23 Effects of Water Pollution Control Costs on Base Metal Mining in Canada, by N.A. Papanicolaou and B.W. Mackenzie; 74 pages. Published 1981.

No. 24 The Costs of Uncertainty: Regulating Health and Safety in the Canadian Uranium Industry, by I. Robinson; 74 pages, 3 illustrations. Published 1982.

No. 25 Economic Guidelines for Small Mineral Deposits/ Directives économiques relatives aux petits gisements, by B.W. Mackenzie and M.L. Bilodeau; 66 pages, 12 tables, 14 illustrations. Published 1982.

No. 26 Effects of Public Policy on Investment Demand: The Case of Taxation in Canadian Base Metal Mining, by B.W. Mackenzie and C.H. Pye; 58 pages, 17 tables, 11 illustrations. Published 1982.

No. 27 The Prospects for Canadian Uranium, by S. Salaff; 50 pages, 9 tables. Published 1983.

No. 28 Economic Mineral Exploration Targets, by B.W. Mackenzie; 72 pages, 3 tables, 19 illustrations. Published 1984.

No. 29 Dominant Government Firms in an Oligopolistic Industry: The Case of Saskatchewan Potash, by F. Flatters and N. Olewiler; 43 pages, 3 tables. Published 1984.

No. 30 Canadian Mineral Policy Formulation: A Case Study of the Adversarial Process, by D. Yudelman; 83 pages. Published 1984.

No. 31 Federal Policy and the Role of Public Enterprise in the Mining Sector, by M.J. Prince and G.B. Doern; 52 pages, 2 tables. Published 1984.

No. 32 Productivity and Price: The Case of Gold Mining in Ontario, by A.G. Green; 54 pages, 5 tables, 2 illustrations. Published 1984.

No. 33 The Origins of Public Enterprise in the Canadian Mineral Sector: Three Provincial Case Studies, by M.J. Prince and G.B. Doern; 143 pages, 9 tables, 2 illustrations. Published 1985.

No. 34 Mining and the Macdonald Commission: The State of the Industry in the Mid-1980s, by D. Yudelman; 116 pages, 2 tables. Published 1985.

Technical Papers

No. 1 Financing and Stabilization Policies in a Cyclical Industry: The Case of Inco in the Seventies, by W.T. Cannon; 200 pages, 33 tables, 12 illustrations. Published 1981.

No. 2 Economic Effects of Smelter Controls on the Canadian Nonferrous Mining Industry, by B.W. Mackenzie and M.L. Bilodeau; 162 pages, 44 tables, 16 illustrations. Published 1982.

No. 3 Secondary Supply of Copper and Ferrous Metals and Canadian Metal Markets, by K. Stollery; 138 pages, 24 tables, 16 illustrations. Published 1983.

No. 4 Mineral Technology Transfer: Evaluation of the CANMET Pit Slope Project, by B.W. Mackenzie and R. Pakalnis; 220 pages, 20 tables, 17 illustrations Published 1985.

No. 5 Sourcebook for Native Participation in Canadian Mineral Activities, by M.J. Wojciechowski and K.A. Graham; 160 pages, 2 tables, 1illustrations. Published 1985.

Mineral Policy Updates

Mineral Policy Update 1981, by Margot J. Wojciechowski and C.E. McMurray; 85 pages. Published 1983.

Mineral Policy Update 1982, by Margot J. Wojciechowski and C.E. McMurray; 88 pages. Published 1983.

Mineral Policy Update 1983, by Margot J. Wojciechowski; 88 pages. Published 1984.

Eastern Arctic Study
(Published jointly by the Centre for Resource Studies and the Institute of Local Government)

The Inuit Land Claim, Constitutional Development, and Local Government Reform in the Northwest Territories: An Overview, by Katherine A. Graham and Anne B. McAllister, 50 pages, published 1981.

Industrial Development in the Eastern Arctic Study Area: A Preliminary Overview, by C. George Miller, 31 pages, published 1981.

Eastern Arctic Study Case Study Series: The Alaska Native Claims Settlement, by David Baker, 100 pages, published 1982.

Eastern Arctic Study Case Study Series: Mineral Exploration in the Baker Lake Area, by Anne B. McAllister, 58 pages, published 1982.

Eastern Arctic Study Case Study Series: The Development of the Polaris Mine, by Katherine A. Graham, 61 pages, published 1982.

Eastern Arctic Study Case Study Series: The Nanisivik Mine, by Margot J. Wojciechowski, 62 pages, published 1982.

Eastern Arctic Study Annotated Bibliography, by M.P. Sharon Brown, 68 pages, published 1984.

A Climate for Change: Alternatives for the Central and Eastern Arctic, by Katherine A. Graham, M.P. Sharon Brown, Anne B. McAllister, and Margot J. Wojciechowski, Final Report of the Eastern Arctic Study, 198 pages, published 1984.

Eastern Arctic Study Case Study Series: James Bay Settlement, by Anne B. McAllister, 61 pages, published 1985.

Eastern Arctic Study Case Study Series: Beaufort Sea Oil and Gas Development, by M.P. Sharon Brown, Katherine A. Graham and Margot J. Wojciechowski, 85 pages, published 1985.